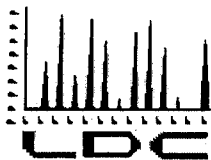


# APPENDIX A

## DATA VALIDATION REPORTS

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## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 8, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on February 16, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### LDC Project #35878:

#### SDG #

#### Fraction

AUK1, AUL1

Polychlorinated Biphenyls, Metals, Wet Chemistry

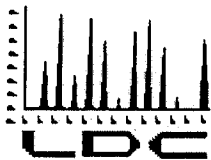
The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist



**LABORATORY DATA CONSULTANTS, INC.**

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 11, 2016

SUBJECT: Revised Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed are the revised validation reports for the fraction listed below. Please replace the previously submitted reports with the enclosed revised reports.

**LDC Project #35878:**

**SDG #**

**Fraction**

AUK1, AUL1

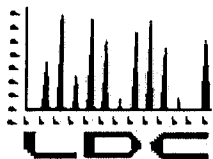
Polychlorinated Biphenyls

- Added the field duplicate comparison.

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 21, 2016

SUBJECT: Revised Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed are the revised validation reports for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

**LDC Project #35878:**

**SDG #**

**Fraction**

AUK1

Wet Chemistry

- Added Moisture Content by ASTM D2216 and removed the TOC triplicate qualifier (QC was within criteria).

Wet Chemistry

AUL1

- Added Moisture Content by ASTM D2216.

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist



[illegible]

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 11, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUK1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PMU-6-0-2cm-160119	AUK1A	Sediment	01/19/16
JF-PMU-6-0-10cm-160119	AUK1B	Sediment	01/19/16
JF-PMU-6-0-10cm-160119DL	AUK1BDL	Sediment	01/19/16
JF-PMU-5-0-2cm-160119	AUK1C	Sediment	01/19/16
JF-PMU-5-0-10cm-160119	AUK1D	Sediment	01/19/16
JF-PMN-6-0-2cm-160119	AUK1E	Sediment	01/19/16
JF-PMN-6-0-10cm-160119	AUK1F	Sediment	01/19/16
JF-PMN-5-0-2cm-160119	AUK1G	Sediment	01/19/16
JF-PMN-5-0-10cm-160119	AUK1H	Sediment	01/19/16
JF-PMN-105-0-2cm-160119	AUK1I	Sediment	01/19/16
JF-PMU-4-0-2cm-160119	AUK1J	Sediment	01/19/16
JF-PMU-4-0-2cm-160119DL	AUK1JDL	Sediment	01/19/16
JF-PMU-4-0-10cm-160119	AUK1K	Sediment	01/19/16
JF-PMU-4-0-10cm-160119DL	AUK1KDL	Sediment	01/19/16
JF-PMU-3-0-2cm-160119	AUK1L	Sediment	01/19/16
JF-PMU-3-0-2cm-160119DL	AUK1LDL	Sediment	01/19/16
JF-PMU-3-0-10cm-160119	AUK1M	Sediment	01/19/16
JF-PMU-3-0-10cm-160119MS	AUK1MMS	Sediment	01/19/16
JF-PMU-3-0-10cm-160119MSD	AUK1MMSD	Sediment	01/19/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UU (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Column	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
JF-PMU-3-0-2cm-160119	Not specified	Decachlorobiphenyl	NR (40-126)	All TCL compounds	J (all detects) UJ (all non-detects)	A

\*NR = Recovery is not reported due to chromatographic interference.

Surrogate recoveries (%R) were not within QC limits for sample JF-PMU-3-0-2cm-160119DL. No data were qualified for samples analyzed at greater than or equal to 5X dilution.

All internal standard areas and retention times were within QC limits.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Affected Compound	Flag	A or P
JF-PMU-3-0-10cm-160119MS/MSD (JF-PMU-3-0-10cm-160119)	Aroclor-1260	177 (50-150)	-	Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) J (all detects) J (all detects)	A
JF-PMU-3-0-10cm-160119MS/MSD (JF-PMU-3-0-10cm-160119)	Aroclor-1260	177 (50-150)	-	Aroclor-1242	NA	-

Relative percent differences (RPD) were within QC limits.

## VIII. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254 and Aroclor-1248.

## IX. Field Duplicates

Samples JF-PMN-5-0-2cm-160119 and JF-PMN-105-0-2cm-160119 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	JF-PMN-5-0-2cm-160119	JF-PMN-105-0-2cm-160119	
Aroclor-1248	12	14	15
Aroclor-1254	25	31	21
Aroclor-1260	14	20	35

## X. Compound Quantitation

All compound quantitations met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
JF-PMU-6-0-10cm-160119	Aroclor-1248 Aroclor-1254	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
JF-PMU-4-0-2cm-160119	Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A
JF-PMU-4-0-10cm-160119	Aroclor-1248 Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects) J (all detects)	A
JF-PMU-3-0-2cm-160119	Aroclor-1254	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

## XI. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
JF-PMU-6-0-10cm-160119	Aroclor-1248 Aroclor-1254	R R	A
JF-PMU-6-0-10cm-160119DL	All TCL compounds except Aroclor-1248 Aroclor-1254	R	A
JF-PMU-4-0-2cm-160119	Aroclor-1254 Aroclor-1260	R R	A
JF-PMU-4-0-2cm-160119DL	All TCL compounds except Aroclor-1254 Aroclor-1260	R	A
JF-PMU-4-0-10cm-160119	Aroclor-1248 Aroclor-1254 Aroclor-1260	R R R	A

Sample	Compound	Flag	A or P
JF-PMU-4-0-10cm-160119DL	All TCL compounds except Aroclor-1248 Aroclor-1254 Aroclor-1260	R	A
JF-PMU-3-0-2cm-160119	Aroclor-1254	R	A
JF-PMU-3-0-2cm-160119DL	All TCL compounds except Aroclor-1254	R	A

Due to surrogate %R and MS/MSD %R, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Data Qualification Summary - SDG AUK1**

Sample	Compound	Flag	A or P	Reason
JF-PMU-3-0-2cm-160119	All TCL compounds except Aroclor-1254	UJ (all non-detects)	A	Surrogates (%R)
JF-PMU-3-0-10cm-160119	Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) J (all detects) J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
JF-PMU-6-0-10cm-160119	Aroclor-1248 Aroclor-1254	R R	A	Overall assessment of data
JF-PMU-6-0-10cm-160119DL	All TCL compounds except Aroclor-1248 Aroclor-1254	R	A	Overall assessment of data
JF-PMU-4-0-2cm-160119	Aroclor-1254 Aroclor-1260	R R	A	Overall assessment of data
JF-PMU-4-0-2cm-160119DL	All TCL compounds except Aroclor-1254 Aroclor-1260	R	A	Overall assessment of data
JF-PMU-4-0-10cm-160119	Aroclor-1248 Aroclor-1254 Aroclor-1260	R R R	A	Overall assessment of data
JF-PMU-4-0-10cm-160119DL	All TCL compounds except Aroclor-1248 Aroclor-1254 Aroclor-1260	R	A	Overall assessment of data
JF-PMU-3-0-2cm-160119	Aroclor-1254	R	A	Overall assessment of data
JF-PMU-3-0-2cm-160119DL	All TCL compounds except Aroclor-1254	R	A	Overall assessment of data

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG AUK1**

No Sample Data Qualified in this SDG



LDC #: 35878A3b

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AUK1

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 2/19/16

Page: 1 of 2

Reviewer: EF2nd Reviewer: EF

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	% PSD/ICV $\leq 20$
III.	Continuing calibration	A	CN $\leq 20$
IV.	Laboratory Blanks	A	
V.	Field blanks	N	
VI.	Surrogate spikes /15	SW/A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples, SRM	A/SW	LC, SRM
IX.	Field duplicates	SW	D = 8, 10
X.	Compound quantitation/RL/LOQ/LODs	SW	
XI.	Target compound identification	N	
XII.	Overall assessment of data	SW	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PMU-6-0-2cm-160119	AUK1A	Sediment	01/19/16
2	JF-PMU-6-0-10cm-160119	AUK1B	Sediment	01/19/16
3	JF-PMU-6-0-10cm-160119DL	AUK1BDL	Sediment	01/19/16
4	JF-PMU-5-0-2cm-160119	AUK1C	Sediment	01/19/16
5	JF-PMU-5-0-10cm-160119	AUK1D	Sediment	01/19/16
6	JF-PMN-6-0-2cm-160119	AUK1E	Sediment	01/19/16
7	JF-PMN-6-0-10cm-160119	AUK1F	Sediment	01/19/16
8	JF-PMN-5-0-2cm-160119 D	AUK1G	Sediment	01/19/16
9	JF-PMN-5-0-10cm-160119	AUK1H	Sediment	01/19/16
10	JF-PMN-105-0-2cm-160119 D	AUK1I	Sediment	01/19/16
11	JF-PMU-4-0-2cm-160119	AUK1J	Sediment	01/19/16
12	JF-PMU-4-0-2cm-160119DL	AUK1JDL	Sediment	01/19/16
13	JF-PMU-4-0-10cm-160119	AUK1K	Sediment	01/19/16
14	JF-PMU-4-0-10cm-160119DL	AUK1KDL	Sediment	01/19/16
15	JF-PMU-3-0-2cm-160119	AUK1L	Sediment	01/19/16
16	JF-PMU-3-0-2cm-160119DL	AUK1LDL	Sediment	01/19/16
17	JF-PMU-3-0-10cm-160119	AUK1M	Sediment	01/19/16

LDC #: 35878A3b

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AUK1

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 2/19/16

Page: 2 of 2

Reviewer: B

2nd Reviewer: CR

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

	Client ID	Lab ID	Matrix	Date
18	JF-PMU-3-0-10cm-160119MS	AUK1MMS	Sediment	01/19/16
19	JF-PMU-3-0-10cm-160119MSD	AUK1MMSD	Sediment	01/19/16
20				
21				
22				
23				

Notes:

	MB - 012116					

## VALIDATION FINDINGS WORKSHEET

**METHOD:** Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes: \_\_\_\_\_

\_\_\_\_\_



LDC #: 35878 A3b

**VALIDATION FINDINGS WORKSHEET**  
**Matrix Spike/Matrix Spike Duplicates**Page:    / of   

Reviewer: FT

2nd Reviewer:                     

METHOD: GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y	N	N/A	Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?

Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

Y N N/A

[illegible]

LDC #: 35878 A2b

## VALIDATION FINDINGS WORKSHEET

METHOD: GC HPLC

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: CA

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N/N/A Was SRM analyzed for each matrix in this SDG?

Y N N/A

[illegible]

LDC #: 35878 A3b**VALIDATION FINDINGS WORKSHEET**  
**Compound Quantitation and Reported CRQLs**Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: QMETHOD: ✓ GC    HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Level W/D OnlyY N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?Y N N/A Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

#	Compound Name	Findings	Associated Samples	Qualifications
	<u>2, AA, <del>BB</del> F1</u>	<u>x'd cal Range</u>	<u>2</u>	<u>1 det / A</u>
	<u>AA, BB</u>		<u>11</u>	
	<u>2, AA, BB</u>		<u>13</u>	
	<u>AA</u>	<u>✓</u>	<u>15</u>	<u>✓</u>

Comments: See sample calculation verification worksheet for recalculations

LDC #: 35878 A36**VALIDATION FINDINGS WORKSHEET**  
**Overall Assessment of Data**Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: QMETHOD: GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Associated samples	Compounds	Findings	Qualifications
2		Z, AA	x'd cal Range	R/A
3		all except Z, AA	diluted	
11		AA, BB	x'd cal Range	
12		all except AA, BB	diluted	
13		Z, AA, BB	x'd cal Range	
14		all except Z, AA, BB	diluted	
15		AA	x'd cal Range	
16		all except AA	diluted	✓

Comments: \_\_\_\_\_



LDC #: 35878A3hVALIDATION FINDINGS WORKSHEET  
Field DuplicatesPage: 1 of 1Reviewer: FT2nd reviewer: anMETHOD: ☒ GC ☐ HPLC☒ Y ☐ N ☐ N/A

Were field duplicate pairs identified in this SDG?

☒ Y ☐ N ☐ N/A

Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( <u>ug/kg</u> )		%RPD Limit (≤ _____ %)	Qualification (Parent only)
	8	10		
Z	12	14	15	
AA	25	31	21	
BB	14	20	35	

Compound	Concentration ( )		%RPD Limit (≤ _____ %)	Qualification (Parent only)

Compound	Concentration ( )		%RPD Limit (≤ _____ %)	Qualification (Parent only)

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 2, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUK1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PMU-6-0-2cm-160119	AUK1A	Sediment	01/19/16
JF-PMU-6-0-10cm-160119	AUK1B	Sediment	01/19/16
JF-PMU-5-0-2cm-160119	AUK1C	Sediment	01/19/16
JF-PMU-5-0-10cm-160119	AUK1D	Sediment	01/19/16
JF-PMN-6-0-2cm-160119	AUK1E	Sediment	01/19/16
JF-PMN-6-0-10cm-160119	AUK1F	Sediment	01/19/16
JF-PMN-5-0-2cm-160119	AUK1G	Sediment	01/19/16
JF-PMN-5-0-10cm-160119	AUK1H	Sediment	01/19/16
JF-PMN-105-0-2cm-160119	AUK1I	Sediment	01/19/16
JF-PMU-4-0-2cm-160119	AUK1J	Sediment	01/19/16
JF-PMU-4-0-10cm-160119	AUK1K	Sediment	01/19/16
JF-PMU-3-0-2cm-160119	AUK1L	Sediment	01/19/16
JF-PMU-3-0-10cm-160119	AUK1M	Sediment	01/19/16
JF-PMU-6-0-2cm-160119MS	AUK1AMS	Sediment	01/19/16
JF-PMU-6-0-2cm-160119DUP	AUK1ADUP	Sediment	01/19/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A  
Mercury by EPA SW 846 Method 7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. ICPMS Tune**

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## **III. Instrument Calibration**

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## **IV. ICP Interference Check Sample Analysis**

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Lead Mercury	0.0050 mg/Kg 0.00083 mg/Kg	All samples in SDG AUK1

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JF-PMU-6-0-2cm-160119MS (All samples in SDG AUK1)	Silver	28.6 (75-125)	J (all detects)	A

### VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
JF-PMU-6-0-2cm-160119DUP (All samples in SDG AUK1)	Chromium Lead	41.8 ( $\leq 35$ ) 109 ( $\leq 35$ )	J (all detects) J (all detects)	A

### IX. Serial Dilution

Serial dilution was not performed for this SDG.

### X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

### XI. Field Duplicates

Samples JF-PMN-5-0-2cm-160119 and JF-PMN-105-0-2cm-160119 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD (Limits)
	JF-PMN-5-0-2cm-160119	JF-PMN-105-0-2cm-160119	
Arsenic	5.7	5.5	4 ( $\leq 50$ )
Cadmium	0.12	0.11	9 ( $\leq 50$ )
Chromium	16.9	16.4	3 ( $\leq 50$ )
Copper	23.7	23.2	2 ( $\leq 50$ )
Lead	8.72	8.02	8 ( $\leq 50$ )
Mercury	0.07	0.17	83 ( $\leq 50$ )

Analyte	Concentration (mg/Kg)		RPD (Limits)
	JF-PMN-5-0-2cm-160119	JF-PMN-105-0-2cm-160119	
Silver	0.104	0.096	8 (≤50)
Zinc	61	58	5 (≤50)

## **XII. Internal Standards (ICP-MS)**

Internal standards data were not reviewed for Stage 2B validation.

## **XIII. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

## **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R and DUP RPD, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Metals - Data Qualification Summary - SDG AUK1**

Sample	Analyte	Flag	A or P	Reason
JF-PMU-6-0-2cm-160119 JF-PMU-6-0-10cm-160119 JF-PMU-5-0-2cm-160119 JF-PMU-5-0-10cm-160119 JF-PMN-6-0-2cm-160119 JF-PMN-6-0-10cm-160119 JF-PMN-5-0-2cm-160119 JF-PMN-5-0-10cm-160119 JF-PMN-105-0-2cm-160119 JF-PMU-4-0-2cm-160119 JF-PMU-4-0-10cm-160119 JF-PMU-3-0-2cm-160119 JF-PMU-3-0-10cm-160119	Silver	J (all detects)	A	Matrix spike (%R)
JF-PMU-6-0-2cm-160119 JF-PMU-6-0-10cm-160119 JF-PMU-5-0-2cm-160119 JF-PMU-5-0-10cm-160119 JF-PMN-6-0-2cm-160119 JF-PMN-6-0-10cm-160119 JF-PMN-5-0-2cm-160119 JF-PMN-5-0-10cm-160119 JF-PMN-105-0-2cm-160119 JF-PMU-4-0-2cm-160119 JF-PMU-4-0-10cm-160119 JF-PMU-3-0-2cm-160119 JF-PMU-3-0-10cm-160119	Chromium Lead	J (all detects) J (all detects)	A	Duplicate sample analysis (RPD)

**Jorgensen Forge Early Action Area**  
**Metals - Laboratory Blank Data Qualification Summary - SDG AUK1**

No Sample Data Qualified in this SDG

LDC #: 35878A4a

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUK1

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3-1-16

Page: 1 of 2

Reviewer: MG

2nd Reviewer: a

**METHOD:** Metals (EPA SW 846 Method 6020A/7471A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MS
VIII.	Duplicate sample analysis	SW	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D = 7+9
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PMU-6-0-2cm-160119	AUK1A	Sediment	01/19/16
2	JF-PMU-6-0-10cm-160119	AUK1B	Sediment	01/19/16
3	JF-PMU-5-0-2cm-160119	AUK1C	Sediment	01/19/16
4	JF-PMU-5-0-10cm-160119	AUK1D	Sediment	01/19/16
5	JF-PMN-6-0-2cm-160119	AUK1E	Sediment	01/19/16
6	JF-PMN-6-0-10cm-160119	AUK1F	Sediment	01/19/16
7	JF-PMN-5-0-2cm-160119	AUK1G	Sediment	01/19/16
8	JF-PMN-5-0-10cm-160119	AUK1H	Sediment	01/19/16
9	JF-PMN-105-0-2cm-160119	AUK1I	Sediment	01/19/16
10	JF-PMU-4-0-2cm-160119	AUK1J	Sediment	01/19/16
11	JF-PMU-4-0-10cm-160119	AUK1K	Sediment	01/19/16
12	JF-PMU-3-0-2cm-160119	AUK1L	Sediment	01/19/16
13	JF-PMU-3-0-10cm-160119	AUK1M	Sediment	01/19/16
14	JF-PMU-6-0-2cm-160119MS	AUK1AMS	Sediment	01/19/16
15	JF-PMU-6-0-2cm-160119DUP	AUK1ADUP	Sediment	01/19/16



LDC #: 35878A4a

# VALIDATION COMPLETENESS WORKSHEET

SDG #: AUK1

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3-1-16

Page: 2 of 2

Reviewer: MG

2nd Reviewer: Q

**METHOD:** Metals (EPA SW 846 Method 6020A/7471A)

	Client ID	Lab ID	Matrix	Date
16				
17				
18				
19				
20	PBS			

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_


LDC #: 35878A4a

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1

Reviewer: MG

2nd reviewer: 

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed

LDC #: 35878A4a

SDG #: See Cover

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Sample Concentration units, unless otherwise noted: mg/kg

## VALIDATION FINDINGS WORKSHEET

## PB/ICB/CCB QUALIFIED SAMPLES

Soil preparation factor applied: 25x

Associated Samples: all (&gt;5x)

Page: 1 of 1

Reviewer: MG

2nd Reviewer: CL

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	No Qual's.									
Pb	0.0050			0.0250										
Hg	0.00083			0.00415										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 35878A4a

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike Analysis

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: 9

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y **N** N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A

Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

**LEVEL IV ONLY:**

Y	N	N/A
---	---	-----

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \* post digestion spike in limit (105.8%), so no "R" qual. for N.D.'s.

LDC #: 35878 A4a

## VALIDATION FINDINGS WORKSHEET

### Duplicate Analysis

Page: 1 of 1

Reviewer: *MG*

2nd Reviewer:           C          

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y/N N/A Were all duplicate sample relative percent differences (RPD)  $\leq 20\%$  for water samples and  $\leq 35\%$  for soil samples? If no, see qualifications below. A control limit of  $\pm R.L.$  ( $\pm 2X$  R.L. for soil) was used for sample values that were  $< 5X$  the R.L., including the case when only one of the duplicate sample values was  $< 5X$  R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

**LEVEL IV ONLY:**

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \_\_\_\_\_

DUP.4SW

LDC#: 35878A4a**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: ✓**METHOD:** Metals (EPA Method 6020A/7471A)

Analyte	Concentration (mg/Kg)		RPD (≤50)	
	7	9		
Arsenic	5.7	5.5	4	
Cadmium	0.12	0.11	9	
Chromium	16.9	16.4	3	
Copper	23.7	23.2	2	
Lead	8.72	8.02	8	
Mercury	0.07	0.17	83	
Silver	0.104	0.096	8	
Zinc	61	58	5	

V:\FIELD DUPLICATES\FD\_inorganic\35878A4a.WPD

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 21, 2016

**Parameters:** Wet Chemistry

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc./  
Materials Testing & Consulting, Inc.

**Sample Delivery Group (SDG):** AUK1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-PMU-6-0-2cm-160119	AUK1A	Sediment	01/19/16
JF-PMU-6-0-10cm-160119	AUK1B	Sediment	01/19/16
JF-PMU-5-0-2cm-160119	AUK1C	Sediment	01/19/16
JF-PMU-5-0-10cm-160119	AUK1D	Sediment	01/19/16
JF-PMN-6-0-2cm-160119	AUK1E	Sediment	01/19/16
JF-PMN-6-0-10cm-160119	AUK1F	Sediment	01/19/16
JF-PMN-5-0-2cm-160119	AUK1G	Sediment	01/19/16
JF-PMN-5-0-10cm-160119	AUK1H	Sediment	01/19/16
JF-PMN-105-0-2cm-160119	AUK1I	Sediment	01/19/16
JF-PMU-4-0-2cm-160119	AUK1J	Sediment	01/19/16
JF-PMU-4-0-10cm-160119	AUK1K	Sediment	01/19/16
JF-PMU-3-0-2cm-160119	AUK1L	Sediment	01/19/16
JF-PMU-3-0-10cm-160119	AUK1M	Sediment	01/19/16
JF-PMU-6-0-2cm-160119MS	AUK1AMS	Sediment	01/19/16
JF-PMU-6-0-2cm-160119DUP	AUK1ADUP	Sediment	01/19/16
JF-PMU-6-0-10cm-160119DUP	AUK1BDUP	Sediment	01/19/16
JF-PMU-6-0-10cm-160119TRP	AUK1BTRP	Sediment	01/19/16
JF-PMU-6-0-2cm-160119TRP	AUK1ATRP	Sediment	01/19/16

## **Introduction**

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method  
Specific Gravity by American Society for Testing and Materials (ASTM) D854  
Total Organic Carbon by Plumb Method  
Total Solids by Standard Method 2540G  
Moisture Content by ASTM D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

<b>Spike ID (Associated Samples)</b>	<b>Analyte</b>	<b>%R (Limits)</b>	<b>Flag</b>	<b>A or P</b>
JF-PMU-6-0-2cm-160119MS (All samples in SDG AUK1)	Total organic carbon	38.8 (75-125)	J (all detects)	A

## **VII. Triplicates Sample Analysis**

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

## IX. Field Duplicates

Samples JF-PMN-5-0-2cm-160119 and JF-PMN-105-0-2cm-160119 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)
	JF-PMN-5-0-2cm-160119	JF-PMN-105-0-2cm-160119	
Specific gravity	2.73	2.67	2 (≤50)
Total organic carbon	1.16 %	1.21 %	4 (≤50)
Total solids	61.49 %	61.49 %	0 (≤50)

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD (Limits)
	JF-PMN-5-0-2cm-160119	JF-PMN-105-0-2cm-160119	
#10 (2000)	99.8	99.8	0 (≤50)
#18 (1000)	99.3	99.4	0 (≤50)
#35 (500)	98.1	98.2	0 (≤50)
#60 (250)	94.3	94.3	0 (≤50)
#120 (125)	62.8	62.8	0 (≤50)
#230 (63)	40.0	39.9	0 (≤50)
31.0	27.0	26.5	2 (≤50)
15.6	18.2	18.6	2 (≤50)
7.8	12.5	12.2	2 (≤50)
3.9	8.5	8.2	4 (≤50)
2.0	5.8	5.8	0 (≤50)
1.0	3.9	3.7	5 (≤50)

## X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R, data were qualified as estimated in thirteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Data Qualification Summary - SDG AUK1**

Sample	Analyte	Flag	A or P	Reason
JF-PMU-6-0-2cm-160119 JF-PMU-6-0-10cm-160119 JF-PMU-5-0-2cm-160119 JF-PMU-5-0-10cm-160119 JF-PMN-6-0-2cm-160119 JF-PMN-6-0-10cm-160119 JF-PMN-5-0-2cm-160119 JF-PMN-5-0-10cm-160119 JF-PMN-105-0-2cm-160119 JF-PMU-4-0-2cm-160119 JF-PMU-4-0-10cm-160119 JF-PMU-3-0-2cm-160119 JF-PMU-3-0-10cm-160119	Total organic carbon	J (all detects)	A	Matrix spike (%R)

**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AUK1**

No Sample Data Qualified in this SDG

LDC #: 35878A6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-1-16

SDG #: AUK1

Level III

Page: 1 of 2

Laboratory: Analytical Resources, Inc./Materials Testing &amp; Consulting, Inc.

Reviewer: MG

2nd Reviewer:           **METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	SW MS	
VII.	Duplicate sample analysis	<del>SW</del> TRIP	
VIII.	Laboratory control samples	A LCS / SRM	
IX.	Field duplicates	SW D = 7 + 9	
X.	Sample result verification	N	
XI.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-PMU-6-0-2cm-160119	AUK1A	Sediment	01/19/16
2	JF-PMU-6-0-10cm-160119	AUK1B	Sediment	01/19/16
3	JF-PMU-5-0-2cm-160119	AUK1C	Sediment	01/19/16
4	JF-PMU-5-0-10cm-160119	AUK1D	Sediment	01/19/16
5	JF-PMN-6-0-2cm-160119	AUK1E	Sediment	01/19/16
6	JF-PMN-6-0-10cm-160119	AUK1F	Sediment	01/19/16
7	JF-PMN-5-0-2cm-160119	AUK1G	Sediment	01/19/16
8	JF-PMN-5-0-10cm-160119	AUK1H	Sediment	01/19/16
9	JF-PMN-105-0-2cm-160119	AUK1I	Sediment	01/19/16
10	JF-PMU-4-0-2cm-160119	AUK1J	Sediment	01/19/16
11	JF-PMU-4-0-10cm-160119	AUK1K	Sediment	01/19/16
12	JF-PMU-3-0-2cm-160119	AUK1L	Sediment	01/19/16
13	JF-PMU-3-0-10cm-160119	AUK1M	Sediment	01/19/16
14	JF-PMU-6-0-2cm-160119MS	AUK1AMS	Sediment	01/19/16
15	JF-PMU-6-0-2cm-160119DUP	AUK1ADUP	Sediment	01/19/16
16	JF-PMU-6-0-10cm-160119DUP	AUK1BDUP	Sediment	01/19/16
17	JF-PMU-6-0-10cm-160119TRP	AUK1BTRP	Sediment	01/19/16

LDC #: 35878A6

## VALIDATION COMPLETENESS WORKSHEET

Date: 3-1-16


SDG #: AUK1

Level III

Page: 2 of 2

Laboratory: Analytical Resources, Inc./Materials Testing &amp; Consulting, Inc.

Reviewer: MG

2nd Reviewer: **METHOD:** (Analyte) Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

	Client ID	Lab ID	Matrix	Date
18	JF-PMU-6-0-2cm-160119TRP	AUK1ATRP	Sed.	1/19/16
19				
20				
21	PBS			

Notes:

LDC #: 35878A6

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Analysis Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: ca

All circled methods are applicable to each sample.

[illegible]

Comments: \_\_\_\_\_



LDC #: 35010

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike Analysis

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: 9

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was a matrix spike analyzed for each matrix in this SDG?

Y(N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125 (85-115% for Method 300.0)? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

**LEVEL IV ONLY:**

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \_\_\_\_\_

LDC#: 35878A6**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 2  
Reviewer: MG  
2nd Reviewer: caInorganics, Method See Cover

Analyte	Concentration (%)		RPD ( $\leq 50$ )	
	7	9		
Specific Gravity (no units)	2.73	2.67	2	
Total Organic Carbon	1.16	1.21	4	
Total Solids	61.49	61.49	0	

V:\FIELD DUPLICATES\FD\_inorganic\35878A6a.WPD

LDC# 35878A6**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 2 of 2  
Reviewer: MG  
2nd Reviewer: anInorganics: Method See Cover

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD (≤50)	
	7	9		
3/8"	100.0	100.0	0	
#4 (4750)	100.0	100.0	0	
#10 (2000)	99.8	99.8	0	
#18 (1000)	99.3	99.4	0	
#35 (500)	98.1	98.2	0	
#60 (250)	94.3	94.3	0	
#120 (125)	62.8	62.8	0	
#230 (63)	40.0	39.9	0	
31.0	27.0	26.5	2	
15.6	18.2	18.6	2	
7.8	12.5	12.2	2	
3.9	8.5	8.2	4	
2.0	5.8	5.8	0	
1.0	3.9	3.7	5	

V:\FIELD DUPLICATES\FD\_inorganic\35878A6b.wpd

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 11, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUL1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-8-0-2cm-160120	AUL1A	Sediment	01/20/16
JF-LTR-8-0-10cm-160120	AUL1B	Sediment	01/20/16
JF-LTR-1-0-2cm-160120	AUL1C	Sediment	01/20/16
JF-LTR-1-0-10cm-160120	AUL1D	Sediment	01/20/16
JF-LTR-13-0-2cm-160120	AUL1E	Sediment	01/20/16
JF-LTR-13-0-10cm-160120	AUL1F	Sediment	01/20/16
JF-LTR-7-0-2cm-160120	AUL1G	Sediment	01/20/16
JF-LTR-7-0-10cm-160120	AUL1H	Sediment	01/20/16
JF-LTR-2-0-2cm-160120	AUL1I	Sediment	01/20/16
JF-LTR-2-0-10cm-160120	AUL1J	Sediment	01/20/16
JF-LTR-3-0-2cm-160120	AUL1K	Sediment	01/20/16
JF-LTR-3-0-10cm-160120	AUL1L	Sediment	01/20/16
JF-LTR-103-0-10cm-160120	AUL1M	Sediment	01/20/16
JF-LTR-9-0-2-cm-160120	AUL1N	Sediment	01/20/16
JF-LTR-9-0-10cm-160120	AUL1O	Sediment	01/20/16
JF-LTR-7-0-10cm-160120MS	AUL1HMS	Sediment	01/20/16
JF-LTR-7-0-10cm-160120MSD	AUL1HMSD	Sediment	01/20/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

All internal standard areas and retention times were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254 and Aroclor-1248.

#### **IX. Field Duplicates**

Samples JF-LTR-3-0-10cm-160120 and JF-LTR-103-0-10cm-160120 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	JF-LTR-3-0-10cm-160120	JF-LTR-103-0-10cm-160120	
Aroclor-1248	16	17	6
Aroclor-1254	32	34	6
Aroclor-1260	15	14	7

#### **X. Compound Quantitation**

Raw data were not reviewed for Stage 2B validation.

#### **XI. Target Compound Identification**

Raw data were not reviewed for Stage 2B validation.

#### **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Data Qualification Summary - SDG AUL1**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG  
AUL1**

No Sample Data Qualified in this SDG



LDC #: 35878B3b

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AUL1

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 2/19/16

Page: 1 of 2

Reviewer: PJ

2nd Reviewer: a

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	% RSD / ICV $\leq 20$
III.	Continuing calibration	A	CCV $\leq 20$
IV.	Laboratory Blanks	D	
V.	Field blanks	AN	
VI.	Surrogate spikes 15	D	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples, SRM	A/SW	LC7, SRM
IX.	Field duplicates	SN	D = 12, 13
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-8-0-2cm-160120	AUL1A	Sediment	01/20/16
2	JF-LTR-8-0-10cm-160120	AUL1B	Sediment	01/20/16
3	JF-LTR-1-0-2cm-160120	AUL1C	Sediment	01/20/16
4	JF-LTR-1-0-10cm-160120	AUL1D	Sediment	01/20/16
5	JF-LTR-13-0-2cm-160120	AUL1E	Sediment	01/20/16
6	JF-LTR-13-0-10cm-160120	AUL1F	Sediment	01/20/16
7	JF-LTR-7-0-2cm-160120	AUL1G	Sediment	01/20/16
8	JF-LTR-7-0-10cm-160120	AUL1H	Sediment	01/20/16
9	JF-LTR-2-0-2cm-160120	AUL1I	Sediment	01/20/16
10	JF-LTR-2-0-10cm-160120	AUL1J	Sediment	01/20/16
11	JF-LTR-3-0-2cm-160120	AUL1K	Sediment	01/20/16
12	JF-LTR-3-0-10cm-160120 D	AUL1L	Sediment	01/20/16
13	JF-LTR-103-0-10cm-160120 D	AUL1M	Sediment	01/20/16
14	JF-LTR-9-0-2-cm-160120	AUL1N	Sediment	01/20/16
15	JF-LTR-9-0-10cm-160120	AUL1O	Sediment	01/20/16
16	JF-LTR-7-0-10cm-160120MS	AUL1HMS	Sediment	01/20/16
17	JF-LTR-7-0-10cm-160120MSD	AUL1HMSD	Sediment	01/20/16

LDC #: 35878B3b

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AUL1

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 2/19/16

Page: 2 of 2

Reviewer: [Signature]

2nd Reviewer: [Signature]

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

	Client ID	Lab ID	Matrix	Date
18				
19				
20				
21				

Notes:

MB - 012516						

LDC #: 35878 B07

## VALIDATION FINDINGS WORKSHEET

### SRM

Page: 1 of 1

Reviewer: FT

2nd Reviewer: 9

METHOD: GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was SRM analyzed for each matrix in this SDG?

1	Y	N	N/A	Was the SRM recoveries within the limits?
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[illegible]

LDC #: 35878B3bVALIDATION FINDINGS WORKSHEET  
Field DuplicatesPage: 1 of 1Reviewer: FT2nd reviewer: caMETHOD: GC HPLCY N N/A Were field duplicate pairs identified in this SDG?Y N N/A Were target compounds detected in the field duplicate pairs?

Compound	Concentration ( <u>ug/kg</u> )		%RPD Limit (≤ _____ %)	Qualification (Parent only)
	<u>12</u>	<u>13</u>		
<u>Z</u>	<u>16</u>	<u>17</u>	<u>6</u>	
<u>AA</u>	<u>32</u>	<u>34</u>	<u>6</u>	
<u>BB</u>	<u>15</u>	<u>14</u>	<u>7</u>	

Compound	Concentration ( )		%RPD Limit (≤ _____ %)	Qualification (Parent only)

Compound	Concentration ( )		%RPD Limit (≤ _____ %)	Qualification (Parent only)

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 2, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUL1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-8-0-2cm-160120	AUL1A	Sediment	01/20/16
JF-LTR-8-0-10cm-160120	AUL1B	Sediment	01/20/16
JF-LTR-1-0-2cm-160120	AUL1C	Sediment	01/20/16
JF-LTR-1-0-10cm-160120	AUL1D	Sediment	01/20/16
JF-LTR-13-0-2cm-160120	AUL1E	Sediment	01/20/16
JF-LTR-13-0-10cm-160120	AUL1F	Sediment	01/20/16
JF-LTR-7-0-2cm-160120	AUL1G	Sediment	01/20/16
JF-LTR-7-0-10cm-160120	AUL1H	Sediment	01/20/16
JF-LTR-2-0-2cm-160120	AUL1I	Sediment	01/20/16
JF-LTR-2-0-10cm-160120	AUL1J	Sediment	01/20/16
JF-LTR-3-0-2cm-160120	AUL1K	Sediment	01/20/16
JF-LTR-3-0-10cm-160120	AUL1L	Sediment	01/20/16
JF-LTR-103-0-10cm-160120	AUL1M	Sediment	01/20/16
JF-LTR-9-0-2-cm-160120	AUL1N	Sediment	01/20/16
JF-LTR-9-0-10cm-160120	AUL1O	Sediment	01/20/16
JF-LTR-8-0-2cm-160120MS	AUL1AMS	Sediment	01/20/16
JF-LTR-8-0-2cm-160120DUP	AUL1ADUP	Sediment	01/20/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A  
Mercury by EPA SW 846 Method 7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. ICPMS Tune**

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## **III. Instrument Calibration**

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## **IV. ICP Interference Check Sample Analysis**

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Cadmium Chromium Lead Silver	0.0050 mg/Kg 0.08 mg/Kg 0.0200 mg/Kg 0.005 mg/Kg	All samples in SDG AUL1

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JF-LTR-8-0-2cm-160120MS (All samples in SDG AUL1)	Silver	23.8 (75-125)	J (all detects)	A

### VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

### IX. Serial Dilution

Serial dilution was not performed for this SDG.

### X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

### XI. Field Duplicates

Samples JF-LTR-3-0-10cm-160120 and JF-LTR-103-0-10cm-160120 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD (Limits)
	JF-LTR-3-0-10cm-160120	JF-LTR-103-0-10cm-160120	
Arsenic	3.7	3.0	21 (≤50)
Cadmium	0.0600	0.0500	18 (≤50)
Chromium	19.1	13.9	32 (≤50)
Copper	20.9	23.5	12 (≤50)
Lead	5.78	4.93	16 (≤50)
Mercury	0.025	0.03	18 (≤50)
Silver	0.066	0.062	6 (≤50)
Zinc	34	32	6 (≤50)



## **XII. Internal Standards (ICP-MS)**

Internal standards data were not reviewed for Stage 2B validation.

## **XIII. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

## **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R, data were qualified as estimated in fifteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Metals - Data Qualification Summary - SDG AUL1**

Sample	Analyte	Flag	A or P	Reason
JF-LTR-8-0-2cm-160120 JF-LTR-8-0-10cm-160120 JF-LTR-1-0-2cm-160120 JF-LTR-1-0-10cm-160120 JF-LTR-13-0-2cm-160120 JF-LTR-13-0-10cm-160120 JF-LTR-7-0-2cm-160120 JF-LTR-7-0-10cm-160120 JF-LTR-2-0-2cm-160120 JF-LTR-2-0-10cm-160120 JF-LTR-3-0-2cm-160120 JF-LTR-3-0-10cm-160120 JF-LTR-103-0-10cm-160120 JF-LTR-9-0-2cm-160120 JF-LTR-9-0-10cm-160120	Silver	J (all detects)	A	Matrix spike (%R)

**Jorgensen Forge Early Action Area  
Metals - Laboratory Blank Data Qualification Summary - SDG AUL1**

No Sample Data Qualified in this SDG

LDC #: 35878B4a

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-1-16

SDG #: AUL1

Stage 2B

Page: 1 of 2

Laboratory: Analytical Resources, Inc.

Reviewer: MG

2nd Reviewer:   **METHOD:** Metals (EPA SW 846 Method 6020A/7471A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MS
VIII.	Duplicate sample analysis	A	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D=12+13
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-8-0-2cm-160120	AUL1A	Sediment	01/20/16
2	JF-LTR-8-0-10cm-160120	AUL1B	Sediment	01/20/16
3	JF-LTR-1-0-2cm-160120	AUL1C	Sediment	01/20/16
4	JF-LTR-1-0-10cm-160120	AUL1D	Sediment	01/20/16
5	JF-LTR-13-0-2cm-160120	AUL1E	Sediment	01/20/16
6	JF-LTR-13-0-10cm-160120	AUL1F	Sediment	01/20/16
7	JF-LTR-7-0-2cm-160120	AUL1G	Sediment	01/20/16
8	JF-LTR-7-0-10cm-160120	AUL1H	Sediment	01/20/16
9	JF-LTR-2-0-2cm-160120	AUL1I	Sediment	01/20/16
10	JF-LTR-2-0-10cm-160120	AUL1J	Sediment	01/20/16
11	JF-LTR-3-0-2cm-160120	AUL1K	Sediment	01/20/16
12	JF-LTR-3-0-10cm-160120	AUL1L	Sediment	01/20/16
13	JF-LTR-103-0-10cm-160120	AUL1M	Sediment	01/20/16
14	JF-LTR-9-0-2cm-160120	AUL1N	Sediment	01/20/16
15	JF-LTR-9-0-10cm-160120	AUL1O	Sediment	01/20/16

LDC #: 35878B4a

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-1-16

SDG #: AUL1

Stage 2B

Page: 2 of 2

Laboratory: Analytical Resources, Inc.

Reviewer: MG

2nd Reviewer: a

**METHOD:** Metals (EPA SW 846 Method 6020A/7471A)

	Client ID	Lab ID	Matrix	Date
16	JF-LTR-8-0-2cm-160120MS	AUL1AMS	Sediment	01/20/16
17	JF-LTR-8-0-2cm-160120DUP	AUL1ADUP	Sediment	01/20/16
18				
19				
20				
21	PBS			

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LDC #: 35878B4a

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: C

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed

LDC #: 35878B4a

SDG #: See Cover

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Sample Concentration units, unless otherwise noted: mg/kg

## VALIDATION FINDINGS WORKSHEET

## PB/ICB/CCB QUALIFIED SAMPLES

Soil preparation factor applied: 25x

Associated Samples: all (&gt;5x)

Page: 1 of 1

Reviewer: MG

2nd Reviewer: 9

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	No Qual's.									
Cd	0.0050			0.0250										
Cr	0.08			0.40										
Pb	0.0200			0.1000										
Ag	0.005			0.025										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 35878B4a

## VALIDATION FINDINGS WORKSHEET

## Matrix Spike Analysis

Page: 1 of 1

Reviewer: MG

2nd Reviewer: 9

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y)N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

**LEVEL IV ONLY:**

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \* post digestion spike in limit (103.4 %), so no "R" qual. for NDs

LDC#: 35878B4a**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: o**METHOD:** Metals (EPA Method 6020A/7471A)

Analyte	Concentration (mg/Kg)		RPD ( $\leq 50$ )	
	12	13		
Arsenic	3.7	3.0	21	
Cadmium	0.0600	0.0500	18	
Chromium	19.1	13.9	32	
Copper	20.9	23.5	12	
Lead	5.78	4.93	16	
Mercury	0.025	0.03	18	
Silver	0.066	0.062	6	
Zinc	34	32	6	

V:\FIELD DUPLICATES\FD\_inorganic\35878B4a.WPD



## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 21, 2016

**Parameters:** Wet Chemistry

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc./  
Materials Testing & Consulting, Inc.

**Sample Delivery Group (SDG):** AUL1

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-8-0-2cm-160120	AUL1A	Sediment	01/20/16
JF-LTR-8-0-10cm-160120	AUL1B	Sediment	01/20/16
JF-LTR-1-0-2cm-160120	AUL1C	Sediment	01/20/16
JF-LTR-1-0-10cm-160120	AUL1D	Sediment	01/20/16
JF-LTR-13-0-2cm-160120	AUL1E	Sediment	01/20/16
JF-LTR-13-0-10cm-160120	AUL1F	Sediment	01/20/16
JF-LTR-7-0-2cm-160120	AUL1G	Sediment	01/20/16
JF-LTR-7-0-10cm-160120	AUL1H	Sediment	01/20/16
JF-LTR-2-0-2cm-160120	AUL1I	Sediment	01/20/16
JF-LTR-2-0-10cm-160120	AUL1J	Sediment	01/20/16
JF-LTR-3-0-2cm-160120	AUL1K	Sediment	01/20/16
JF-LTR-3-0-10cm-160120	AUL1L	Sediment	01/20/16
JF-LTR-103-0-10cm-160120	AUL1M	Sediment	01/20/16
JF-LTR-9-0-2-cm-160120	AUL1N	Sediment	01/20/16
JF-LTR-9-0-10cm-160120	AUL1O	Sediment	01/20/16
JF-LTR-8-0-2cm-160120	AUL1P	sediment	01/20/16
JF-LTR-8-0-10cm-160120	AUL1Q	sediment	01/20/16
JF-LTR-1-0-2cm-160120	AUL1R	sediment	01/20/16
JF-LTR-1-0-10cm-160120	AUL1S	sediment	01/20/16
JF-LTR-13-0-2cm-160120	AUL1T	sediment	01/20/16
JF-LTR-13-0-10cm-160120	AUL1U	sediment	01/20/16
JF-LTR-7-0-2cm-160120	AUL1V	sediment	01/20/16
JF-LTR-7-0-10cm-160120	AUL1W	sediment	01/20/16
JF-LTR-2-0-2cm-160120	AUL1X	sediment	01/20/16
JF-LTR-2-0-10cm-160120	AUL1Y	sediment	01/20/16

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
JF-LTR-3-0-2cm-160120	AUL1Z	sediment	01/20/16
JF-LTR-3-0-10cm-160120	AUL1AA	sediment	01/20/16
JF-LTR-103-0-10cm-160120	AUL1AB	sediment	01/20/16
JF-LTR-9-0-2-cm-160120	AUL1AC	sediment	01/20/16
JF-LTR-9-0-10cm-160120	AUL1AD	sediment	01/20/16
JF-LTR-8-0-2cm-160120MS	AUL1AMS	Sediment	01/20/16
JF-LTR-8-0-2cm-160120DUP	AUL1ADUP	Sediment	01/20/16
JF-LTR-8-0-2cm-160120TRP	AUL1ATRP	Sediment	01/20/16

## **Introduction**

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method  
Specific Gravity by American Society for Testing and Materials (ASTM) D854  
Total Organic Carbon by Plumb Method  
Total Solids by Standard Method 2540G  
Moisture Content by ASTM D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

## **VII. Triplicates Sample Analysis**

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

## **IX. Field Duplicates**

Samples JF-LTR-3-0-10cm-160120 and JF-LTR-103-0-10cm-160120 and samples JF-LTR-3-0-10cm-160120 and JF-LTR-103-0-10cm-160120 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD (Limits)
	JF-LTR-3-0-10cm-160120	JF-LTR-103-0-10cm-160120	
Total Organic Carbon	0.790	0.410	63 (≤50)
Total Solids	69.47	76.24	9 (≤50)

Analyte	Concentration		RPD (Limits)
	JF-LTR-3-0-10cm-160120	JF-LTR-103-0-10cm-160120	
Specific gravity	2.74	2.77	1 (≤50)

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD (Limits)
	JF-LTR-3-0-10cm-160120	JF-LTR-103-0-10cm-160120	
#10 (2000)	99.1	98.5	1 (≤50)
#18 (1000)	97.0	96.2	1 (≤50)
#35 (500)	96.0	95.0	1 (≤50)
#60 (250)	95.5	94.0	2 (≤50)
#120 (125)	94.5	91.2	4 (≤50)
#230 (63)	88.4	75.8	15 (≤50)
31.0	70.7	56.2	23 (≤50)
15.6	45.3	36.8	21 (≤50)
7.8	27.2	22.3	20 (≤50)
3.9	16.1	13.4	18 (≤50)
2.0	11.0	9.2	18 (≤50)
1.0	7.1	6.1	15 (≤50)

## X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Wet Chemistry - Data Qualification Summary - SDG AUL1**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AUL1**

No Sample Data Qualified in this SDG



LDC #: 35878B6 **VALIDATION COMPLETENESS WORKSHEET**  
SDG #: AUL1 Level III  
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3-1-16  
Page: 1 of 2  
Reviewer: MG  
2nd Reviewer:                     

**METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS
VII.	Duplicate sample analysis	A	TRIP
VIII.	Laboratory control samples	A	LCS / SRM
IX.	Field duplicates	SW	D = 12+13 D = 27+28
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-8-0-2cm-160120	AUL1A	Sediment	01/20/16
2	JF-LTR-8-0-10cm-160120	AUL1B	Sediment	01/20/16
3	JF-LTR-1-0-2cm-160120	AUL1C	Sediment	01/20/16
4	JF-LTR-1-0-10cm-160120	AUL1D	Sediment	01/20/16
5	JF-LTR-13-0-2cm-160120	AUL1E	Sediment	01/20/16
6	JF-LTR-13-0-10cm-160120	AUL1F	Sediment	01/20/16
7	JF-LTR-7-0-2cm-160120	AUL1G	Sediment	01/20/16
8	JF-LTR-7-0-10cm-160120	AUL1H	Sediment	01/20/16
9	JF-LTR-2-0-2cm-160120	AUL1I	Sediment	01/20/16
10	JF-LTR-2-0-10cm-160120	AUL1J	Sediment	01/20/16
11	JF-LTR-3-0-2cm-160120	AUL1K	Sediment	01/20/16
12	JF-LTR-3-0-10cm-160120	AUL1L	Sediment	01/20/16
13	JF-LTR-103-0-10cm-160120	AUL1M	Sediment	01/20/16
14	JF-LTR-9-0-2-cm-160120	AUL1N	Sediment	01/20/16
15	JF-LTR-9-0-10cm-160120	AUL1O	Sediment	01/20/16
16	JF-LTR-8-0-2cm-160120	AUL1P	sediment	01/20/16
17	JF-LTR-8-0-10cm-160120	AUL1Q	sediment	01/20/16

LDC #: 35878B6

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUL1

Level III

Laboratory: Analytical Resources, Inc./Materials Testing &amp; Consulting, Inc.

Date: 3-1-16

Page: 2 of 2

Reviewer: MG

2nd Reviewer:                     **METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-1-0-2cm-160120	AUL1R	sediment	01/20/16
19	JF-LTR-1-0-10cm-160120	AUL1S	sediment	01/20/16
20	JF-LTR-13-0-2cm-160120	AUL1T	sediment	01/20/16
21	JF-LTR-13-0-10cm-160120	AUL1U	sediment	01/20/16
22	JF-LTR-7-0-2cm-160120	AUL1V	sediment	01/20/16
23	JF-LTR-7-0-10cm-160120	AUL1W	sediment	01/20/16
24	JF-LTR-2-0-2cm-160120	AUL1X	sediment	01/20/16
25	JF-LTR-2-0-10cm-160120	AUL1Y	sediment	01/20/16
26	JF-LTR-3-0-2cm-160120	AUL1Z	sediment	01/20/16
27	JF-LTR-3-0-10cm-160120	AUL1AA	sediment	01/20/16
28	JF-LTR-103-0-10cm-160120	AUL1AB	sediment	01/20/16
29	JF-LTR-9-0-2-cm-160120	AUL1AC	sediment	01/20/16
30	JF-LTR-9-0-10cm-160120	AUL1AD	sediment	01/20/16
31	JF-LTR-8-0-2cm-160120MS	AUL1AMS	Sediment	01/20/16
32	JF-LTR-8-0-2cm-160120DUP	AUL1ADUP	Sediment	01/20/16
33	JF-LTR-8-0-2cm-160120TRP	AUL1ATRP	Sediment	01/20/16
34				
35				
36				
37	PBS			

Notes:

LDC #: 35878B6

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Analysis Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: ca

**All circled methods are applicable to each sample.**

[illegible]

Comments: \_\_\_\_\_

LDC#: 35878B6

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 2  
Reviewer: MG  
2nd Reviewer: aInorganics, Method See Cover

Analyte	Concentration (%)		RPD ( $\leq 50$ )	
	12	13		
Total Organic Carbon	0.790	0.410	63	
Total Solids	69.47	76.24	9	

V:\FIELD DUPLICATES\FD\_inorganic\35878B6a.WPD

Analyte	Concentration (no units)		RPD ( $\leq 50$ )	
	27	28		
Specific Gravity	2.14	2.77	271	

V:\FIELD DUPLICATES\FD\_inorganic\35878B6a.WPD

LDC# 35878B6**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 2 of 2Reviewer: MG2nd Reviewer: caInorganics: Method See Cover

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD (≤50)	
	12	13		
3/8"	100.0	100.0	0	
#4 (4750)	100.0	100.0	0	
#10 (2000)	99.1	98.5	1	
#18 (1000)	97.0	96.2	1	
#35 (500)	96.0	95.0	1	
#60 (250)	95.5	94.0	2	
#120 (125)	94.5	91.2	4	
#230 (63)	88.4	75.8	15	
31.0	70.7	56.2	23	
15.6	45.3	36.8	21	
7.8	27.2	22.3	20	
3.9	16.1	13.4	18	
2.0	11.0	9.2	18	
1.0	7.1	6.1	15	

V:\FIELD DUPLICATES\FD\_inorganic\35878B6b.wpd

LDC #: 35878

## EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 3.8.16Page: 1 of 12<sup>nd</sup> Reviewer: [Signature]The LDC job number listed above was entered by [Signature].

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓	(U)	
Ib.	- All samples present/match report?	✓	(U)	
Ic.	- All reported analytes present?	✓	(U)	
Id.	-10% verification of EDD?	✓	(U)	
II.	EDD Preparation/Entry	-		
Ila.	- QC Level applied? (EPAS <del>Stage2B</del> or EPAS <del>Stage4</del> )	✓	(U)	
Ilb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	NA	(U)	
III.	Reasonableness Checks	-		
IIla.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	✓	(U)	
IIlb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓	(U)	
IIlc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓	(U)	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	NA	(U)	
IIle.	- Were any results reported above calibration range? If so, were results qualified appropriately?	NA	(U)	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	(U)	
IIlg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	NA	(U)	
IIlh.	- Is the detect flag set to "N" for all "U" qualified blank results?	✓	(U)	

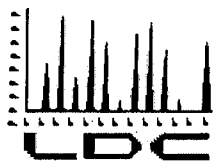
Notes: \*see readme

The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>
1) Readme_Jorgensen_030816.doc	MS Word 2003	A "Readme" file (this document).
2) LDC35878_AUK1,AUL1_VEDD_20160308.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AUK1 35878A AUL1 35878B

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



# LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 17, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on March 2, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #35967:**

**SDG #**

**Fraction**

AUR0, AUT8

Polychlorinated Biphenyls, Metals, Wet Chemistry

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

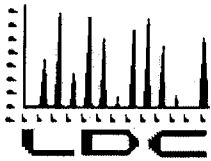
- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist





**LABORATORY DATA CONSULTANTS, INC.**

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 21, 2016

SUBJECT: Revised Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed are the revised validation reports for the fractions listed below. Please replace the previously submitted reports with the enclosed revised reports.

**LDC Project #35967:**

**SDG #**

**Fraction**

AUR0

Polychlorinated Biphenyls

- Added the rinsate to the DVR.

Wet Chemistry

- Added Moisture Content by ASTM D2216.

AUT8

Wet Chemistry

- Added Moisture Content by ASTM D2216.

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist

Shaded cells indicate Stage 4 validation (all other cells are Stage 2B validation). These sample counts do not include MS, MSD, or DUP's.

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 21, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUR0

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-6-0-2cm-160122	AUR0A	Sediment	01/22/16
JF-LTR-6-0-10cm-160122	AUR0B	Sediment	01/22/16
JF-LTR-10-0-2cm-160122	AUR0C	Sediment	01/22/16
JF-LTR-10-0-10cm-160122	AUR0D	Sediment	01/22/16
JF-LTR-110-0-2cm-160122	AUR0E	Sediment	01/22/16
JF-LTR-18-0-2cm-160122	AUR0F	Sediment	01/22/16
JF-LTR-18-0-10cm-160122	AUR0G	Sediment	01/22/16
JF-LTR-20-0-2cm-160122	AUR0H	Sediment	01/22/16
JF-LTR-20-0-10cm-160122	AUR0I	Sediment	01/22/16
JF-PMN-1-0-2cm-160122	AUR0J	Sediment	01/22/16
JF-PMN-1-0-10cm-160122	AUR0K	Sediment	01/22/16
JF-PMN-1-0-10cm-160122DL	AUR0KDL	Sediment	01/22/16
JF-PMN-2-0-2cm-160122	AUR0L	Sediment	01/22/16
JF-PMN-2-0-10cm-160122	AUR0M	Sediment	01/22/16
JF-PMN-3-0-2cm-160122	AUR0N	Sediment	01/22/16
JF-PMN-3-0-10cm-160122	AUR0O	Sediment	01/22/16
JF-Rinsate-160122	AUR0P	Water	01/22/16
JF-LTR-20-0-2cm-160122MS	AUR0HMS	Sediment	01/22/16
JF-LTR-20-0-2cm-160122MSD	AUR0HMSD	Sediment	01/22/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample JF-Rinsate-160122 was identified as a rinsate. No contaminants were found.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

All internal standard areas and retention times were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254 and Aroclor-1248.

## IX. Field Duplicates

Samples JF-LTR-10-0-2cm-160122 and JF-LTR-110-0-2cm-160122 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	JF-LTR-10-0-2cm-160122	JF-LTR-110-0-2cm-160122	
Aroclor-1248	16	14	13
Aroclor-1254	31	19	48
Aroclor-1260	16	14	13

## X. Compound Quantitation

All compound quantitations met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
JF-PMN-1-0-10cm-160122	Aroclor-1254	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

## XI. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
JF-PMN-1-0-10cm-160122	Aroclor-1254	R	A

Sample	Compound	Flag	A or P
JF-PMN-1-0-10cm-160122DL	All TCL compounds except Aroclor-1254	R	A

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Data Qualification Summary - SDG AUR0**

Sample	Compound	Flag	A or P	Reason
JF-PMN-1-0-10cm-160122	Aroclor-1254	R	A	Overall assessment of data
JF-PMN-1-0-10cm-160122DL	All TCL compounds except Aroclor-1254	R	A	Overall assessment of data

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG AUR0**

No Sample Data Qualified in this SDG



LDC #: 35967A3b

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AUR0

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/8/16

Page: 1 of 2

Reviewer: FZ2nd Reviewer: FZ

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / Δ	
II.	Initial calibration/ICV	Δ / A	% RSD / 1σ ≤ 20
III.	Continuing calibration	Δ	CV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	ND	R = 17
VI.	Surrogate spikes / 15	Δ	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples / SRM	A / SW	100% SRM
IX.	Field duplicates	SW	D = 3, 5
X.	Compound quantitation/RL/LOQ/LODs	SW	
XI.	Target compound identification	N	
XII.	Overall assessment of data	SW	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-6-0-2cm-160122	AUR0A	Sediment	01/22/16
2	JF-LTR-6-0-10cm-160122	AUR0B	Sediment	01/22/16
3	JF-LTR-10-0-2cm-160122 D	AUR0C	Sediment	01/22/16
4	JF-LTR-10-0-10cm-160122	AUR0D	Sediment	01/22/16
5	JF-LTR-110-0-2cm-160122 D	AUR0E	Sediment	01/22/16
6	JF-LTR-18-0-2cm-160122	AUR0F	Sediment	01/22/16
7	JF-LTR-18-0-10cm-160122	AUR0G	Sediment	01/22/16
8	JF-LTR-20-0-2cm-160122	AUR0H	Sediment	01/22/16
9	JF-LTR-20-0-10cm-160122	AUR0I	Sediment	01/22/16
10	JF-PMN-1-0-2cm-160122	AUR0J	Sediment	01/22/16
11	JF-PMN-1-0-10cm-160122	AUR0K	Sediment	01/22/16
12	JF-PMN-1-0-10cm-160122DL	AUR0KDL	Sediment	01/22/16
13	JF-PMN-2-0-2cm-160122	AUR0L	Sediment	01/22/16
14	JF-PMN-2-0-10cm-160122	AUR0M	Sediment	01/22/16
15	JF-PMN-3-0-2cm-160122	AUR0N	Sediment	01/22/16
16	JF-PMN-3-0-10cm-160122	AUR0O	Sediment	01/22/16
17	JF-Rinsate-160122	AUR0P	Water	01/22/16

LDC #: 35967A3b

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AUR0

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/8/16

Page: 2 of 2

Reviewer: FR2nd Reviewer: FR

METHOD: GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-20-0-2cm-160122MS	AUROHMS	Sediment	01/22/16
19	JF-LTR-20-0-2cm-160122MSD	AUROHMSD	Sediment	01/22/16
20				
21				
22				
23				
24				

Notes:

1	MB - 012716				
2	MB - 012916				

## VALIDATION FINDINGS WORKSHEET

**METHOD:** Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LDC #: 35967A3b

## VALIDATION FINDINGS WORKSHEET

### SRM

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: 9

METHOD: GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

<u>Y</u>	<u>N</u>	<u>N/A</u>	Was SRM analyzed for each matrix in this SDG?
<u>Y</u>	<u>N</u>	<u>N/A</u>	Was the SRM recoveries within the limits?

<u>Y</u>	<u>N</u>	<u>N/A</u>	Was the SRM recoveries within the limits?
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[illegible]

LDC #: 35967A3b

## VALIDATION FINDINGS WORKSHEET

### Compound Quantitation and Reported CRQLs

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: 9

METHOD: ✓ GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

**Level IV/D Only**

Y N N/A Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y	N	N/A
---	---	-----

Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

[illegible]

Comments: See sample calculation verification worksheet for recalculations

LDC #: 35967A3bVALIDATION FINDINGS WORKSHEET  
Overall Assessment of DataPage: 1 of 1Reviewer: FT2nd Reviewer: CEMETHOD: ✓ GC    HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Associated samples	Compounds	Findings	Qualifications
	11	AA	x'd cal Range	P/A
	12	all except AA	diluted	P/A

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LDC#: 35967A3b

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**

Page: 1 of 1  
Reviewer: FE?  
2nd Reviewer: OK

**METHOD:** GC PCB (EPA SW 846 Method 8082A)

Compound	Concentration (ug/Kg)		RPD
	3	5	
Z	16	14	13
AA	31	19	48
BB	16	14	13

V:\FIELD DUPLICATES\35967A3b.wpd

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 9, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUR0

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-6-0-2cm-160122	AUR0A	Sediment	01/22/16
JF-LTR-6-0-10cm-160122	AUR0B	Sediment	01/22/16
JF-LTR-10-0-2cm-160122	AUR0C	Sediment	01/22/16
JF-LTR-10-0-10cm-160122	AUR0D	Sediment	01/22/16
JF-LTR-110-0-2cm-160122	AUR0E	Sediment	01/22/16
JF-LTR-18-0-2cm-160122	AUR0F	Sediment	01/22/16
JF-LTR-18-0-10cm-160122	AUR0G	Sediment	01/22/16
JF-LTR-20-0-2cm-160122	AUR0H	Sediment	01/22/16
JF-LTR-20-0-10cm-160122	AUR0I	Sediment	01/22/16
JF-PMN-1-0-2cm-160122	AUR0J	Sediment	01/22/16
JF-PMN-1-0-10cm-160122	AUR0K	Sediment	01/22/16
JF-PMN-2-0-2cm-160122	AUR0L	Sediment	01/22/16
JF-PMN-2-0-10cm-160122	AUR0M	Sediment	01/22/16
JF-PMN-3-0-2cm-160122	AUR0N	Sediment	01/22/16
JF-PMN-3-0-10cm-160122	AUR0O	Sediment	01/22/16
JF-Rinsate-160122	AUR0P	Water	01/22/16
JF-LTR-6-0-2cm-160122MS	AUR0AMS	Sediment	01/22/16
JF-LTR-6-0-2cm-160122DUP	AUR0ADUP	Sediment	01/22/16
JF-Rinsate-160122MS	AUR0PMS	Water	01/22/16
JF-Rinsate-160122DUP	AUR0PDUP	Water	01/22/16



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A  
Mercury by EPA SW 846 Methods 7470A/7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium	0.06 mg/Kg	All sediment samples in SDG AUR0
PB (prep blank)	Arsenic Cadmium Chromium Silver	0.04 ug/L 0.010 ug/L 0.09 ug/L 0.010 ug/L	All water samples in SDG AUR0

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-Rinsate-160122	Chromium	0.27 ug/L	0.27U ug/L

## VI. Field Blanks

Sample JF-Rinsate-160122 was identified as a rinsate. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration (ug/L)
JF-Rinsate-160122	Chromium Copper Lead Zinc	0.27 0.240 0.010 0.42

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JF-LTR-6-0-2cm-160122MS (All sediment samples in SDG AUR0)	Chromium Silver	-102 (75-125) 31.9 (75-125)	J (all detects) J (all detects)	A
JF-LTR-6-0-2cm-160122MS (All sediment samples in SDG AUR0)	Mercury	128 (75-125)	J (all detects)	A

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
JF-LTR-6-0-2cm-160122DUP (All sediment samples in SDG AUR0)	Chromium	119 ( $\leq 30$ )	-	J (all detects)	A
JF-LTR-6-0-2cm-160122DUP (All sediment samples in SDG AUR0)	Mercury	-	0.05 mg/Kg ( $\leq 0.02$ )	J (all detects)	A

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## **X. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **XI. Field Duplicates**

Samples JF-LTR-10-0-2cm-160122 and JF-LTR-110-0-2cm-160122 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	JF-LTR-10-0-2cm-160122	JF-LTR-110-0-2cm-160122	
Arsenic	13.9	14.5	4
Cadmium	0.2	0.2	0
Chromium	31.6	30.7	3
Copper	40.4	39.1	3
Lead	14.2	13.1	8
Mercury	0.17	0.12	34
Silver	0.152	0.160	5
Zinc	87	87	0

## **XII. Internal Standards (ICP-MS)**

Internal standards data were not reviewed for Stage 2B validation.

## **XIII. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

## **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R and DUP RPD and difference, data were qualified as estimated in fifteen samples.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Metals - Data Qualification Summary - SDG AUR0**

Sample	Analyte	Flag	A or P	Reason
JF-LTR-6-0-2cm-160122 JF-LTR-6-0-10cm-160122 JF-LTR-10-0-2cm-160122 JF-LTR-10-0-10cm-160122 JF-LTR-110-0-2cm-160122 JF-LTR-18-0-2cm-160122 JF-LTR-18-0-10cm-160122 JF-LTR-20-0-2cm-160122 JF-LTR-20-0-10cm-160122 JF-PMN-1-0-2cm-160122 JF-PMN-1-0-10cm-160122 JF-PMN-2-0-2cm-160122 JF-PMN-2-0-10cm-160122 JF-PMN-3-0-2cm-160122 JF-PMN-3-0-10cm-160122	Chromium Silver Mercury	J (all detects) J (all detects) J (all detects)	A	Matrix spike (%R)
JF-LTR-6-0-2cm-160122 JF-LTR-6-0-10cm-160122 JF-LTR-10-0-2cm-160122 JF-LTR-10-0-10cm-160122 JF-LTR-110-0-2cm-160122 JF-LTR-18-0-2cm-160122 JF-LTR-18-0-10cm-160122 JF-LTR-20-0-2cm-160122 JF-LTR-20-0-10cm-160122 JF-PMN-1-0-2cm-160122 JF-PMN-1-0-10cm-160122 JF-PMN-2-0-2cm-160122 JF-PMN-2-0-10cm-160122 JF-PMN-3-0-2cm-160122 JF-PMN-3-0-10cm-160122	Chromium	J (all detects)	A	Duplicate sample analysis (RPD)
JF-LTR-6-0-2cm-160122 JF-LTR-6-0-10cm-160122 JF-LTR-10-0-2cm-160122 JF-LTR-10-0-10cm-160122 JF-LTR-110-0-2cm-160122 JF-LTR-18-0-2cm-160122 JF-LTR-18-0-10cm-160122 JF-LTR-20-0-2cm-160122 JF-LTR-20-0-10cm-160122 JF-PMN-1-0-2cm-160122 JF-PMN-1-0-10cm-160122 JF-PMN-2-0-2cm-160122 JF-PMN-2-0-10cm-160122 JF-PMN-3-0-2cm-160122 JF-PMN-3-0-10cm-160122	Mercury	J (all detects)	A	Duplicate sample analysis (difference)

**Jorgensen Forge Early Action Area**  
**Metals - Laboratory Blank Data Qualification Summary - SDG AUR0**

Sample	Analyte	Modified Final Concentration	A or P
JF-Rinsate-160122	Chromium	0.27U ug/L	A

LDC #: 35967A4a

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-7-16

SDG #: AUR0

Stage 2B

Page: 1 of 2

Laboratory: Analytical Resources, Inc.

Reviewer: MG

2nd Reviewer: [Signature]

**METHOD:** Metals (EPA SW 846 Method 6020A/7470A/7471A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	R = 16
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MS
VIII.	Duplicate sample analysis	SW	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D = 3 + 5
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-6-0-2cm-160122	AUR0A	Sediment	01/22/16
2	JF-LTR-6-0-10cm-160122	AUR0B	Sediment	01/22/16
3	JF-LTR-10-0-2cm-160122	AUR0C	Sediment	01/22/16
4	JF-LTR-10-0-10cm-160122	AUR0D	Sediment	01/22/16
5	JF-LTR-110-0-2cm-160122	AUR0E	Sediment	01/22/16
6	JF-LTR-18-0-2cm-160122	AUR0F	Sediment	01/22/16
7	JF-LTR-18-0-10cm-160122	AUR0G	Sediment	01/22/16
8	JF-LTR-20-0-2cm-160122	AUR0H	Sediment	01/22/16
9	JF-LTR-20-0-10cm-160122	AUR0I	Sediment	01/22/16
10	JF-PMN-1-0-2cm-160122	AUR0J	Sediment	01/22/16
11	JF-PMN-1-0-10cm-160122	AUR0K	Sediment	01/22/16
12	JF-PMN-2-0-2cm-160122	AUR0L	Sediment	01/22/16
13	JF-PMN-2-0-10cm-160122	AUR0M	Sediment	01/22/16
14	JF-PMN-3-0-2cm-160122	AUR0N	Sediment	01/22/16
15	JF-PMN-3-0-10cm-160122	AUR0O	Sediment	01/22/16

LDC #: 35967A4a

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUR0

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3-7-16

Page: 2 of 2

Reviewer: MG

2nd Reviewer: a

**METHOD:** Metals (EPA SW 846 Method 6020A/7470A/7471A)

	Client ID	Lab ID	Matrix	Date
16 2	JF-Rinsate-160122	AUR0P	Water	01/22/16
17 1	JF-LTR-6-0-2cm-160122MS	AUR0AMS	Sediment	01/22/16
18 1	JF-LTR-6-0-2cm-160122DUP	AUR0ADUP	Sediment	01/22/16
19 2	JF-Rinsate-160122MS	AUR0PMS	Water	01/22/16
20 2	JF-Rinsate-160122DUP	AUR0PDUP	Water	01/22/16
21				
22				
23				
24 1	PBS			
25 2	PBW			

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



LDC #: 35967A4a

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1

Reviewer: MG

2nd reviewer: OL

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed

LDC #: 35967A4a  
SDG #: See Cover

**VALIDATION FINDINGS WORKSHEET**  
**PB/ICB/CCB QUALIFIED SAMPLES**

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: CR

**METHOD:** Trace metals (EPA SW 864 Method 6010B/6020/7000)

Soil preparation factor applied: 25x

Sample Concentration units, unless otherwise noted: mg/kg

Associated Samples: 1-15 (>5x)

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	No Qual's.									
Cr	0.06			0.30										

Sample Concentration units, unless otherwise noted: ug/L

Associated Samples: 16

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	16									
As		0.04		0.20										
Cd		0.010		0.050										
Cr		0.09		0.45	0.27									
Ag		0.010		0.050										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 35967A4a**VALIDATION FINDINGS WORKSHEET**  
**Field Blanks**Page: 1 of 1  
Reviewer: MG  
2nd reviewer: 2**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)☒ N N/A  
☒ N N/A

Were field blanks identified in this SDG?

Were target analytes detected in the field blanks?

Sample: 16 Field Blank / Trip Blank / Rinsate Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units ( )
Cr	0.27 (µg/L)
Cu	0.240 ( )
Pb	0.010 ( )
Zn	0.42 ( )

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units ( )

LDC #:

### Matrix Spike Analysis

Reviewer: MG

2nd Reviewer: 9

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y (N) N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

ON N/A

Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \* post digestion spike in limit for Cr (88.3%), so no "R" qual. for N.D.s

LDC #:

## VALIDATION FINDINGS WORKSHEET

### Duplicate Analysis

Page: 1 of 1

Reviewer: MG

2nd Reviewer: 9

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y ~~N~~ N/A

Was a duplicate sample analyzed for each matrix in this SDG?

YN N/A

Were all duplicate sample relative percent differences (RPD)  $\leq 20\%$  for water samples and  $\leq 35\%$  for soil samples? If no, see qualifications below. A control limit of  $\pm R.L.$  ( $\pm 2X$  R.L. for soil) was used for sample values that were  $< 5X$  the R.L., including the case when only one of the duplicate sample values was  $< 5X$  R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments:

LDC#: 35967A4a**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: aw**METHOD:** Metals (EPA Method 6020A/7470A/7471A)

Analyte	Concentration (mg/Kg)		RPD	
	3	5		
Arsenic	13.9	14.5	4	
Cadmium	0.2	0.2	0	
Chromium	31.6	30.7	3	
Copper	40.4	39.1	3	
Lead	14.2	13.1	8	
Mercury	0.17	0.12	34	
Silver	0.152	0.160	5	
Zinc	87	87	0	

V:\FIELD DUPLICATES\FD\_inorganic\35967A4a.WPD

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 21, 2016

**Parameters:** Wet Chemistry

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc./  
Materials Testing & Consulting, Inc.

**Sample Delivery Group (SDG):** AUR0

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-6-0-2cm-160122	AUR0A	Sediment	01/22/16
JF-LTR-6-0-10cm-160122	AUR0B	Sediment	01/22/16
JF-LTR-10-0-2cm-160122	AUR0C	Sediment	01/22/16
JF-LTR-10-0-10cm-160122	AUR0D	Sediment	01/22/16
JF-LTR-110-0-2cm-160122	AUR0E	Sediment	01/22/16
JF-LTR-18-0-2cm-160122	AUR0F	Sediment	01/22/16
JF-LTR-18-0-10cm-160122	AUR0G	Sediment	01/22/16
JF-LTR-20-0-2cm-160122	AUR0H	Sediment	01/22/16
JF-LTR-20-0-10cm-160122	AUR0I	Sediment	01/22/16
JF-PMN-1-0-2cm-160122	AUR0J	Sediment	01/22/16
JF-PMN-1-0-10cm-160122	AUR0K	Sediment	01/22/16
JF-PMN-2-0-2cm-160122	AUR0L	Sediment	01/22/16
JF-PMN-2-0-10cm-160122	AUR0M	Sediment	01/22/16
JF-PMN-3-0-2cm-160122	AUR0N	Sediment	01/22/16
JF-PMN-3-0-10cm-160122	AUR0O	Sediment	01/22/16
JF-LTR-6-0-2cm-160122	AUR0Q	Sediment	01/22/16
JF-LTR-6-0-10cm-160122	AUR0R	Sediment	01/22/16
JF-LTR-10-0-2cm-160122	AUR0S	Sediment	01/22/16
JF-LTR-10-0-10cm-160122	AUR0T	Sediment	01/22/16
JF-LTR-110-0-2cm-160122	AUR0U	Sediment	01/22/16
JF-LTR-18-0-2cm-160122	AUR0V	Sediment	01/22/16
JF-LTR-18-0-10cm-160122	AUR0W	Sediment	01/22/16
JF-LTR-20-0-2cm-160122	AUR0X	Sediment	01/22/16
JF-LTR-20-0-10cm-160122	AUR0Y	Sediment	01/22/16
JF-PMN-1-0-2cm-160122	AUR0Z	Sediment	01/22/16

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
JF-PMN-1-0-10cm-160122	AUR0AA	Sediment	01/22/16
JF-PMN-2-0-2cm-160122	AUR0AB	Sediment	01/22/16
JF-PMN-2-0-10cm-160122	AUR0AC	Sediment	01/22/16
JF-PMN-3-0-2cm-160122	AUR0AD	Sediment	01/22/16
JF-PMN-3-0-10cm-160122	AUR0AE	Sediment	01/22/16
JF-LTR-6-0-2cm-160122MS	AUR0AMS	Sediment	01/22/16
JF-LTR-6-0-2cm-160122DUP	AUR0ADUP	Sediment	01/22/16
JF-LTR-6-0-2cm-160122TRP	AUR0ATRP	Sediment	01/22/16
JF-PMN-1-0-2cm-160122DUP	AUR0JDUP	Sediment	01/22/16
JF-PMN-1-0-2cm-160122TRP	AUR0JTRP	Sediment	01/22/16
JF-PMN-3-0-10cm-160122DUP	AUR0AEDUP	Sediment	01/22/16
JF-PMN-3-0-10cm-160122TRP	AUR0AETRP	Sediment	01/22/16



## **Introduction**

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method  
Specific Gravity by American Society for Testing and Materials (ASTM) D854  
Total Organic Carbon by Plumb Method  
Total Solids by Standard Method 2540G  
Moisture Content by ASTM D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

## **VII. Triplicates Sample Analysis**

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

## **IX. Field Duplicates**

Samples JF-LTR-10-0-2cm-160122 and JF-LTR-110-0-2cm-160122 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (%)		RPD
	JF-LTR-10-0-2cm-160122	JF-LTR-110-0-2cm-160122	
Total organic carbon	3.27	3.29	1
Total solids	38.15	37.89	1

Analyte	Concentration		RPD
	JF-LTR-10-0-2cm-160122	JF-LTR-110-0-2cm-160122	
Specific Gravity	2.74	2.68	2

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD
	JF-LTR-10-0-2cm-160122	JF-LTR-110-0-2cm-160122	
#4 (4750)	99.7	100.0	0
#10 (2000)	98.9	97.5	1
#18 (1000)	97.1	96.2	1
#35 (500)	95.8	95.6	0
#60 (250)	94.8	95.2	0
#120 (125)	91.1	91.9	1
#230 (63)	82.1	82.7	1
(31.0)	68.2	66.5	3
(15.6)	44.9	42.6	5
(7.8)	25.3	24.0	5
(3.9)	14.5	13.7	6
(2.0)	9.6	9.3	3
(1.0)	6.1	6.5	6

## **X. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Wet Chemistry - Data Qualification Summary - SDG AUR0**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AUR0**

No Sample Data Qualified in this SDG

LDC #: 35967A6 **VALIDATION COMPLETENESS WORKSHEET**  
 SDG #: AUR0 Level III  
 Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3-8-16  
 Page: 1 of 2  
 Reviewer: MG  
 2nd Reviewer:   

**METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS
VII.	Duplicate sample analysis	A	TRIP
VIII.	Laboratory control samples	A	LCS / SRM
IX.	Field duplicates	SW	D=3+5 D=18+20
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet


ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-6-0-2cm-160122	AUR0A /	Sediment	01/22/16
2	JF-LTR-6-0-10cm-160122	AUR0B	Sediment	01/22/16
3	JF-LTR-10-0-2cm-160122	AUR0C	Sediment	01/22/16
4	JF-LTR-10-0-10cm-160122	AUR0D	Sediment	01/22/16
5	JF-LTR-110-0-2cm-160122	AUR0E	Sediment	01/22/16
6	JF-LTR-18-0-2cm-160122	AUR0F	Sediment	01/22/16
7	JF-LTR-18-0-10cm-160122	AUR0G	Sediment	01/22/16
8	JF-LTR-20-0-2cm-160122	AUR0H	Sediment	01/22/16
9	JF-LTR-20-0-10cm-160122	AUR0I	Sediment	01/22/16
10	JF-PMN-1-0-2cm-160122	AUR0J	Sediment	01/22/16
11	JF-PMN-1-0-10cm-160122	AUR0K	Sediment	01/22/16
12	JF-PMN-2-0-2cm-160122	AUR0L	Sediment	01/22/16
13	JF-PMN-2-0-10cm-160122	AUR0M	Sediment	01/22/16
14	JF-PMN-3-0-2cm-160122	AUR0N	Sediment	01/22/16
15	JF-PMN-3-0-10cm-160122	AUR0O	Sediment	01/22/16
16	JF-LTR-6-0-2cm-160122	AUR0Q	Sediment	01/22/16
17	JF-LTR-6-0-10cm-160122	AUR0R	Sediment	01/22/16

LDC #: 35967A6      **VALIDATION COMPLETENESS WORKSHEET**  
SDG #: AUR0      Level III  
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3-8-16  
Page: 2 of 2  
Reviewer: MG  
2nd Reviewer: 

**METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-10-0-2cm-160122	AUR0S	Sediment	01/22/16
19	JF-LTR-10-0-10cm-160122	AUR0T	Sediment	01/22/16
20	JF-LTR-110-0-2cm-160122	AUR0U	Sediment	01/22/16
21	JF-LTR-18-0-2cm-160122	AUR0V	Sediment	01/22/16
22	JF-LTR-18-0-10cm-160122	AUR0W	Sediment	01/22/16
23	JF-LTR-20-0-2cm-160122	AUR0X	Sediment	01/22/16
24	JF-LTR-20-0-10cm-160122	AUR0Y	Sediment	01/22/16
25	JF-PMN-1-0-2cm-160122	AUR0Z	Sediment	01/22/16
26	JF-PMN-1-0-10cm-160122	AUR0AA	Sediment	01/22/16
27	JF-PMN-2-0-2cm-160122	AUR0AB	Sediment	01/22/16
28	JF-PMN-2-0-10cm-160122	AUR0AC	Sediment	01/22/16
29	JF-PMN-3-0-2cm-160122	AUR0AD	Sediment	01/22/16
30	JF-PMN-3-0-10cm-160122	AUR0AE	Sediment	01/22/16
31	JF-LTR-6-0-2cm-160122MS	AUR0AMS	Sediment	01/22/16
32	JF-LTR-6-0-2cm-160122DUP	AUR0ADUP	Sediment	01/22/16
33	JF-PMN-1-0-2cm-160122DUP	AUR0JDUP	Sediment	01/22/16
34	JF-PMN-1-0-2cm-160122TRP	AUR0JTRP	Sediment	01/22/16
35	JF-PMN-3-0-10cm-160122DUP	AUR0AEDUP	Sediment	01/22/16
36	JF-PMN-3-0-10cm-160122TRP	AUR0AETRP	Sediment	01/22/16
37	#1 TRP			
38				
39				
40				
41	PBS			

Notes:



LDC #: 35967A6

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Analysis Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: [Signature]

All circled methods are applicable to each sample.

[illegible]

Comments: \_\_\_\_\_

LDC#: 35967A6**VALIDATION FINDINGS WORKSHEET****Field Duplicates**Page: 1 of 2Reviewer: MG2nd Reviewer: anInorganics, Method See Cover

Analyte	Concentration (%)		RPD ( <del>≤50</del> )	
	3	5		
Total Organic Carbon	3.27	3.29	1	
Total Solids	38.15	37.89	1	

V:\FIELD DUPLICATES\FD\_inorganic\35967A6a.WPD

Analyte	Concentration (no unit)		RPD ( <del>≥50</del> )	
	18	20		
Specific Gravity	2.74	2.68	2	

V:\FIELD DUPLICATES\FD\_inorganic\35967A6a.WPD

LDC# 35967A6

# **VALIDATION FINDINGS WORKSHEET** **Field Duplicates**

Page: 2 of 2Reviewer: MG2nd Reviewer: ORInorganics: Method See Cover

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD ( $\pm 50$ )	
	3	5		
3/8"	100.0	100.0	0	2
#4 (4750)	99.7	100.0	0	
#10 (2000)	98.9	97.5	1	
#18 (1000)	97.1	96.2	1	
#35 (500)	95.8	95.6	0	
#60 (250)	94.8	95.2	0	
#120 (125)	91.1	91.9	1	
#230 (63)	82.1	82.7	1	
(31.0)	68.2	66.5	3	
(15.6)	44.9	42.6	5	
(7.8)	25.3	24.0	5	
(3.9)	14.5	13.7	6	
(2.0)	9.6	9.3	3	
(1.0)	6.1	6.5	6	

V:\FIELD DUPLICATES\FD\_inorganic\35967A6b.wpd

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 8, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUT8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-4-0-2cm-160125	AUT8A	Sediment	01/25/16
JF-LTR-4-0-10cm-160125	AUT8B	Sediment	01/25/16
JF-LTR-19-0-2cm-160125	AUT8C	Sediment	01/25/16
JF-LTR-19-0-10cm-160125	AUT8D	Sediment	01/25/16
JF-LTR-21-0-2cm-160125	AUT8E	Sediment	01/25/16
JF-LTR-21-0-10cm-160125	AUT8F	Sediment	01/25/16
JF-LTR-12-0-2cm-160125	AUT8G	Sediment	01/25/16
JF-LTR-12-0-10cm-160125	AUT8H	Sediment	01/25/16
JF-PMN-4-0-2cm-160125	AUT8I	Sediment	01/25/16
JF-PMN-4-0-10cm-160125	AUT8J	Sediment	01/25/16
JF-PMU-1-0-2cm-160125	AUT8K	Sediment	01/25/16
JF-PMU-1-0-10cm-160125	AUT8L	Sediment	01/25/16
JF-PMU-2-0-2cm-160125	AUT8M	Sediment	01/25/16
JF-PMU-2-0-10cm-160125	AUT8N	Sediment	01/25/16
JF-RINSATE-160125	AUT8O	Water	01/25/16
JF-DOCK DECON-160125	AUT8P	Water	01/25/16
JF-PMN-4-0-10cm-160125MS	AUT8JMS	Sediment	01/25/16
JF-PMN-4-0-10cm-160125MSD	AUT8JMDS	Sediment	01/25/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Samples JF-RINSATE-160125 was identified as an rinsate. No contaminants were found.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

All internal standard areas and retention times were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Affected Compound	Flag	A or P
JF-PMN-4-0-10cm-160125MS/MSD (JF-PMN-4-0-10cm-160125)	Aroclor-1260	44.7 (50-150)	49.0 (50-150)	Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) UJ (all non-detects)	A

Relative percent differences (RPD) were within QC limits.

### VIII. Laboratory Control Samples/Standard Reference Materials

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254 and Aroclor-1248.

### IX. Field Duplicates

No field duplicates were identified in this SDG.

### X. Compound Quantitation

Raw data were not reviewed for Stage 2B validation.

### XI. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

### XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Data Qualification Summary - SDG AUT8**

Sample	Compound	Flag	A or P	Reason
JF-PMN-4-0-10cm-160125	Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	J (all detects) UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG  
AUT8**

No Sample Data Qualified in this SDG



LDC #: 35967B3b

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUT8

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/8/16

Page: 1 of 2

Reviewer: EF2nd Reviewer: on**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / A	% RSD / ICV $\leq 20$
III.	Continuing calibration	A	CV $\leq 20$
IV.	Laboratory Blanks	A	
V.	Field blanks	SWND	R = * 5, 10
VI.	Surrogate spikes / 17	A / A	
VII.	Matrix spike/Matrix spike duplicates	SW	
VIII.	Laboratory control samples / SRM	A / SW	res, SRM
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

\* ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-4-0-2cm-160125	AUT8A	Sediment	01/25/16
2	JF-LTR-4-0-10cm-160125	AUT8B	Sediment	01/25/16
3	JF-LTR-19-0-2cm-160125	AUT8C	Sediment	01/25/16
4	JF-LTR-19-0-10cm-160125	AUT8D	Sediment	01/25/16
5	JF-LTR-21-0-2cm-160125	AUT8E	Sediment	01/25/16
6	JF-LTR-21-0-10cm-160125	AUT8F	Sediment	01/25/16
7	JF-LTR-12-0-2cm-160125	AUT8G	Sediment	01/25/16
8	JF-LTR-12-0-10cm-160125	AUT8H	Sediment	01/25/16
9	JF-PMN-4-0-2cm-160125	AUT8I	Sediment	01/25/16
10	JF-PMN-4-0-10cm-160125	AUT8J	Sediment	01/25/16
11	JF-PMU-1-0-2cm-160125	AUT8K	Sediment	01/25/16
12	JF-PMU-1-0-10cm-160125	AUT8L	Sediment	01/25/16
13	JF-PMU-2-0-2cm-160125	AUT8M	Sediment	01/25/16
14	JF-PMU-2-0-10cm-160125	AUT8N	Sediment	01/25/16
15	JF-RINSATE-160125	AUT8O	Water	01/25/16
16	JF-DOCK DECON-160125	AUT8P	Water	01/25/16
17	JF-PMN-4-0-10cm-160125MS	AUT8JMS	Sediment	01/25/16

LDC #: 35967B3b

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUT8

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 01/25/16

Page: 2 of 2

Reviewer: FJ

2nd Reviewer: [Signature]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

	Client ID	Lab ID	Matrix	Date
18	JF-PMN-4-0-10cm-160125MSD	AUT8JMSD	Sediment	01/25/16
19				
20				
21				
22				
23				

Notes:

-	MB-1012916					
	MB-020116					

## VALIDATION FINDINGS WORKSHEET

**METHOD:** Pesticide/PCBs (EPA SW 846 Method 8081/8082)

A. alpha-BHC	I. Dieldrin	Q. Endrin ketone	Y. Aroclor-1242	GG. Chlordane
B. beta-BHC	J. 4,4'-DDE	R. Endrin aldehyde	Z. Aroclor-1248	HH. Chlordane (Technical)
C. delta-BHC	K. Endrin	S. alpha-Chlordane	AA. Aroclor-1254	II. Aroclor 1262
D. gamma-BHC	L. Endosulfan II	T. gamma-Chlordane	BB. Aroclor-1260	JJ. Aroclor 1268
E. Heptachlor	M. 4,4'-DDD	U. Toxaphene	CC. 2,4'-DDD	KK. Oxychlordane
F. Aldrin	N. Endosulfan sulfate	V. Aroclor-1016	DD. 2,4'-DDE	LL. trans-Nonachlor
G. Heptachlor epoxide	O. 4,4'-DDT	W. Aroclor-1221	EE. 2,4'-DDT	MM. cis-Nonachlor
H. Endosulfan I	P. Methoxychlor	X. Aroclor-1232	FF. Hexachlorobenzene	NN.

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LDC #: 35967B36

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1

Reviewer: FT

2nd Reviewer: 9

METHOD:      GC      HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG?

N/A Was an MS/MSD analyzed every 20 samples for each matrix or whenever a sample extraction was performed?

Y/N/N/A Were the MS/MSD percent recoveries (%R) and relative percent differences (RPD) within QC limits?

[illegible]

LDC #: 65 74

## VALIDATION FINDINGS WORKSHEET

SRMPage: 1 of 1

Reviewer:      FT

2nd Reviewer: 9

METHOD: ✓ GC    HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was SRM analyzed for each matrix in this SDG?

Y N N/A

Was the SRM recoveries within the limits?

[illegible]

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 21, 2016

**Parameters:** Wet Chemistry

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc./  
Materials Testing & Consulting, Inc.

**Sample Delivery Group (SDG):** AUT8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-4-0-2cm-160125	AUT8A	Sediment	01/25/16
JF-LTR-4-0-10cm-160125	AUT8B	Sediment	01/25/16
JF-LTR-19-0-2cm-160125	AUT8C	Sediment	01/25/16
JF-LTR-19-0-10cm-160125	AUT8D	Sediment	01/25/16
JF-LTR-21-0-2cm-160125	AUT8E	Sediment	01/25/16
JF-LTR-21-0-10cm-160125	AUT8F	Sediment	01/25/16
JF-LTR-12-0-2cm-160125	AUT8G	Sediment	01/25/16
JF-LTR-12-0-10cm-160125	AUT8H	Sediment	01/25/16
JF-PMN-4-0-2cm-160125	AUT8I	Sediment	01/25/16
JF-PMN-4-0-10cm-160125	AUT8J	Sediment	01/25/16
JF-PMU-1-0-2cm-160125	AUT8K	Sediment	01/25/16
JF-PMU-1-0-10cm-160125	AUT8L	Sediment	01/25/16
JF-PMU-2-0-2cm-160125	AUT8M	Sediment	01/25/16
JF-PMU-2-0-10cm-160125	AUT8N	Sediment	01/25/16
JF-LTR-4-0-2cm-160125	AUT8Q	Sediment	01/25/16
JF-LTR-4-0-10cm-160125	AUT8R	Sediment	01/25/16
JF-LTR-19-0-2cm-160125	AUT8T	Sediment	01/25/16
JF-LTR-19-0-10cm-160125	AUT8U	Sediment	01/25/16
JF-LTR-21-0-2cm-160125	AUT8V	Sediment	01/25/16
JF-LTR-21-0-10cm-160125	AUT8W	Sediment	01/25/16
JF-LTR-12-0-2cm-160125	AUT8X	Sediment	01/25/16
JF-LTR-12-0-10cm-160125	AUT8Y	Sediment	01/25/16
JF-LTR-4-0-2cm-160125	AUT8Z	Sediment	01/25/16
JF-PMN-4-0-10cm-160125	AUT8AA	Sediment	01/25/16
JF-PMN-1-0-2cm-160125	AUT8AB	Sediment	01/25/16

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
JF-PMU-1-0-10cm-160125	AUT8AC	Sediment	01/25/16
JF-PMU-2-0-2cm-160125	AUT8AD	Sediment	01/25/16
JF-PMU-2-0-10cm-160125	AUT8AE	Sediment	01/25/16
JF-LTR-4-0-2cm-160125MS	AUT8AMS	Sediment	01/25/16
JF-LTR-4-0-2cm-160125DUP	AUT8ADUP	Sediment	01/25/16
JF-LTR-4-0-2cm-160125TRP	AUT8ATRP	Sediment	01/25/16
JF-PMU-1-0-2cm-160125DUP	AUT8KDUP	Sediment	01/25/16
JF-PMU-1-0-2cm-160125TRP	AUT8KTRP	Sediment	01/25/16
JF-LTR-12-0-2cm-160125DUP	AUT8XDUP	Sediment	01/25/16
JF-LTR-12-0-2cm-160125TRP	AUT8XTRP	Sediment	01/25/16

## **Introduction**

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method  
Specific Gravity by American Society for Testing and Materials (ASTM) D854  
Total Organic Carbon by Plumb Method  
Total Solids by Standard Method 2540G  
Moisture Content by ASTM D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.



The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

## **VII. Triplicates Sample Analysis**

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Data Qualification Summary - SDG AUT8**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AUT8**

No Sample Data Qualified in this SDG

LDC #: 35967B6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-8-16

SDG #: AUT8

Level III

Page: 1 of 2

Laboratory: Analytical Resources, Inc./Materials Testing &amp; Consulting, Inc.

Reviewer: MG

2nd Reviewer: *[Signature]***METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS
VII.	Duplicate sample analysis	A	TRIP
VIII.	Laboratory control samples	A	LCS / SRM
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-4-0-2cm-160125	AUT8A	Sediment	01/25/16
2	JF-LTR-4-0-10cm-160125	AUT8B	Sediment	01/25/16
3	JF-LTR-19-0-2cm-160125	AUT8C	Sediment	01/25/16
4	JF-LTR-19-0-10cm-160125	AUT8D	Sediment	01/25/16
5	JF-LTR-21-0-2cm-160125	AUT8E	Sediment	01/25/16
6	JF-LTR-21-0-10cm-160125	AUT8F	Sediment	01/25/16
7	JF-LTR-12-0-2cm-160125	AUT8G	Sediment	01/25/16
8	JF-LTR-12-0-10cm-160125	AUT8H	Sediment	01/25/16
9	JF-PMN-4-0-2cm-160125	AUT8I	Sediment	01/25/16
10	JF-PMN-4-0-10cm-160125	AUT8J	Sediment	01/25/16
11	JF-PMU-1-0-2cm-160125	AUT8K	Sediment	01/25/16
12	JF-PMU-1-0-10cm-160125	AUT8L	Sediment	01/25/16
13	JF-PMU-2-0-2cm-160125	AUT8M	Sediment	01/25/16
14	JF-PMU-2-0-10cm-160125	AUT8N	Sediment	01/25/16
15	JF-LTR-4-0-2cm-160125	AUT8Q	Sediment	01/25/16
16	JF-LTR-4-0-10cm-160125	AUT8R	Sediment	01/25/16
17	JF-LTR-19-0-2cm-160125	AUT8T	Sediment	01/25/16

LDC #: 35967B6 **VALIDATION COMPLETENESS WORKSHEET**  
SDG #: AUT8 Level III  
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3-8-16  
Page: 2 of 2  
Reviewer: MG  
2nd Reviewer: ✓

**METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-19-0-10cm-160125	AUT8U	Sediment	01/25/16
19	JF-LTR-21-0-2cm-160125	AUT8V	Sediment	01/25/16
20	JF-LTR-21-0-10cm-160125	AUT8W	Sediment	01/25/16
21	JF-LTR-12-0-2cm-160125	AUT8X	Sediment	01/25/16
22	JF-LTR-12-0-10cm-160125	AUT8Y	Sediment	01/25/16
23	JF-LTR-4-0-2cm-160125	AUT8Z	Sediment	01/25/16
24	JF-PMN-4-0-10cm-160125	AUT8AA	Sediment	01/25/16
25	JF-PMN-1-0-2cm-160125	AUT8AB	Sediment	01/25/16
26	JF-PMU-1-0-10cm-160125	AUT8AC	Sediment	01/25/16
27	JF-PMU-2-0-2cm-160125	AUT8AD	Sediment	01/25/16
28	JF-PMU-2-0-10cm-160125	AUT8AE	Sediment	01/25/16
29	JF-LTR-4-0-2cm-160125MS	AUT8AMS	Sediment	01/25/16
30	JF-LTR-4-0-2cm-160125DUP	AUT8ADUP	Sediment	01/25/16
31	JF-PMU-1-0-2cm-160125DUP	AUT8KDUP	Sediment	01/25/16
32	JF-PMU-1-0-2cm-160125TRP	AUT8KTRP	Sediment	01/25/16
33	JF-LTR-12-0-2cm-160125DUP	AUT8XDUP	Sediment	01/25/16
34	JF-LTR-12-0-2cm-160125TRP	AUT8XTRP	Sediment	01/25/16
35	#1TRP			
36				
37				
38				
39	PBS			

Notes:

LDC #: 35967B6

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Analysis Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: [Signature]

All circled methods are applicable to each sample.

[illegible]

Comments: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 9, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUT8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-4-0-2cm-160125	AUT8A	Sediment	01/25/16
JF-LTR-4-0-10cm-160125	AUT8B	Sediment	01/25/16
JF-LTR-19-0-2cm-160125	AUT8C	Sediment	01/25/16
JF-LTR-19-0-10cm-160125	AUT8D	Sediment	01/25/16
JF-LTR-21-0-2cm-160125	AUT8E	Sediment	01/25/16
JF-LTR-21-0-10cm-160125	AUT8F	Sediment	01/25/16
JF-LTR-12-0-2cm-160125	AUT8G	Sediment	01/25/16
JF-LTR-12-0-10cm-160125	AUT8H	Sediment	01/25/16
JF-PMN-4-0-2cm-160125	AUT8I	Sediment	01/25/16
JF-PMN-4-0-10cm-160125	AUT8J	Sediment	01/25/16
JF-PMU-1-0-2cm-160125	AUT8K	Sediment	01/25/16
JF-PMU-1-0-10cm-160125	AUT8L	Sediment	01/25/16
JF-PMU-2-0-2cm-160125	AUT8M	Sediment	01/25/16
JF-PMU-2-0-10cm-160125	AUT8N	Sediment	01/25/16
JF-RINSATE-160125	AUT8O	Water	01/25/16
JF-DOCK DECON-160125	AUT8P	Water	01/25/16
JF-LTR-4-0-2cm-160125MS	AUT8AMS	Sediment	01/25/16
JF-LTR-4-0-2cm-160125DUP	AUT8ADUP	Sediment	01/25/16
JF-RINSATE-160125MS	AUT8OMS	Water	01/25/16
JF-RINSATE-160125DUP	AUT8ODUP	Water	01/25/16



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A  
Mercury by EPA SW 846 Methods 7470A/7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UU (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Lead Mercury	0.0050 mg/Kg 0.00083 mg/Kg	All sediment samples in SDG AUT8
PB (prep blank)	Cadmium Chromium Lead Silver	0.010 ug/L 0.09 ug/L 0.010 ug/L 0.010 ug/L	All water samples in SDG AUT8

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-RINSATE-160125	Chromium	0.20 ug/L	0.20U ug/L

## VI. Field Blanks

Sample JF-RINSATE-160125 was identified as a rinsate. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration (ug/L)
JF-RINSATE-160125	Arsenic Chromium Copper Lead Zinc	0.3 0.20 0.360 0.7 0.87

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JF-LTR-4-0-2cm-160125MS (All sediment samples in SDG AUT8)	Arsenic Chromium Copper Lead Zinc	139 (75-125) 244 (75-125) 815 (75-125) 275 (75-125) 138 (75-125)	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A
JF-LTR-4-0-2cm-160125MS (All sediment samples in SDG AUT8)	Silver	70.1 (75-125)	J (all detects)	A

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Difference (Limits)	Flag	A or P
JF-LTR-4-0-2cm-160125DUP (All sediment samples in SDG AUT8)	Copper Lead	42.4 ( $\leq 30$ ) 52.0 ( $\leq 30$ )	- -	J (all detects) J (all detects)	A

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## **X. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## **XI. Field Duplicates**

No field duplicates were identified in this SDG.

## **XII. Internal Standards (ICP-MS)**

Internal standards data were not reviewed for Stage 2B validation.

## **XIII. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

## **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R and DUP RPD, data were qualified as estimated in fourteen samples.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Metals - Data Qualification Summary - SDG AUT8**

Sample	Analyte	Flag	A or P	Reason
JF-LTR-4-0-2cm-160125 JF-LTR-4-0-10cm-160125 JF-LTR-19-0-2cm-160125 JF-LTR-19-0-10cm-160125 JF-LTR-21-0-2cm-160125 JF-LTR-21-0-10cm-160125 JF-LTR-12-0-2cm-160125 JF-LTR-12-0-10cm-160125 JF-PMN-4-0-2cm-160125 JF-PMN-4-0-10cm-160125 JF-PMU-1-0-2cm-160125 JF-PMU-1-0-10cm-160125 JF-PMU-2-0-2cm-160125 JF-PMU-2-0-10cm-160125	Arsenic Chromium Copper Lead Zinc Silver	J (all detects) J (all detects) J (all detects) J (all detects) J (all detects) J (all detects)	A	Matrix spike (%R)
JF-LTR-4-0-2cm-160125 JF-LTR-4-0-10cm-160125 JF-LTR-19-0-2cm-160125 JF-LTR-19-0-10cm-160125 JF-LTR-21-0-2cm-160125 JF-LTR-21-0-10cm-160125 JF-LTR-12-0-2cm-160125 JF-LTR-12-0-10cm-160125 JF-PMN-4-0-2cm-160125 JF-PMN-4-0-10cm-160125 JF-PMU-1-0-2cm-160125 JF-PMU-1-0-10cm-160125 JF-PMU-2-0-2cm-160125 JF-PMU-2-0-10cm-160125	Copper Lead	J (all detects) J (all detects)	A	Duplicate sample analysis (RPD)

**Jorgensen Forge Early Action Area**  
**Metals - Laboratory Blank Data Qualification Summary - SDG AUT8**

Sample	Analyte	Modified Final Concentration	A or P
JF-RINSATE-160125	Chromium	0.20U ug/L	A

LDC #: 35967B4a

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-8-16

SDG #: AUT8

Stage 2B

Page: 1 of 2

Laboratory: Analytical Resources, Inc.

Reviewer: MG

2nd Reviewer: *cr***METHOD:** Metals (EPA SW 846 Method 6020A/7470A/7471A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	R = 15 <del>MS</del>
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MS
VIII.	Duplicate sample analysis	SW	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-4-0-2cm-160125	AUT8A	Sediment	01/25/16
2	JF-LTR-4-0-10cm-160125	AUT8B	Sediment	01/25/16
3	JF-LTR-19-0-2cm-160125	AUT8C	Sediment	01/25/16
4	JF-LTR-19-0-10cm-160125	AUT8D	Sediment	01/25/16
5	JF-LTR-21-0-2cm-160125	AUT8E	Sediment	01/25/16
6	JF-LTR-21-0-10cm-160125	AUT8F	Sediment	01/25/16
7	JF-LTR-12-0-2cm-160125	AUT8G	Sediment	01/25/16
8	JF-LTR-12-0-10cm-160125	AUT8H	Sediment	01/25/16
9	JF-PMN-4-0-2cm-160125	AUT8I	Sediment	01/25/16
10	JF-PMN-4-0-10cm-160125	AUT8J	Sediment	01/25/16
11	JF-PMU-1-0-2cm-160125	AUT8K	Sediment	01/25/16
12	JF-PMU-1-0-10cm-160125	AUT8L	Sediment	01/25/16
13	JF-PMU-2-0-2cm-160125	AUT8M	Sediment	01/25/16
14	JF-PMU-2-0-10cm-160125	AUT8N	Sediment	01/25/16
15	JF-RINSATE-160125	AUT8O	Water	01/25/16

LDC #: 35967B4a

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUT8

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3-8-16

Page: 2 of 2

Reviewer: MG

2nd Reviewer: **METHOD:** Metals (EPA SW 846 Method 6020A/7470A/7471A)

	Client ID	Lab ID	Matrix	Date
16 2	JF-DOCK DECON-160125	AUT8P	Water	01/25/16
17 1	JF-LTR-4-0-2cm-160125MS	AUT8AMS	Sediment	01/25/16
18 1	JF-LTR-4-0-2cm-160125DUP	AUT8ADUP	Sediment	01/25/16
19 2	JF-RINSATE-160125MS	AUT8OMS	Water	01/25/16
20 2	JF-RINSATE-160125DUP	AUT8ODUP	Water	01/25/16
21				
22				
23				
24 1	PBS			
25 2	PBW			

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LDC #:

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1

Reviewer: MG

2nd reviewer: \_\_\_\_\_

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed



LDC #: 35967B4a

SDG #: See Cover

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Sample Concentration units, unless otherwise noted: mg/kg

## VALIDATION FINDINGS WORKSHEET

## PB/ICB/CCB QUALIFIED SAMPLES

Soil preparation factor applied: 25x

Associated Samples: 1-14 (&gt;5x)

Page: 1 of 1

Reviewer: MG

2nd Reviewer: a

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	No Qual's.									
Pb	0.0050			0.0250										
Hg	0.00083			0.00415										

Sample Concentration units, unless otherwise noted: ug/L

Associated Samples: 15,16

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	15									
Cd		0.010		0.050										
Cr		0.09		0.45	0.20									
Pb		0.010		0.050										
Ag		0.010		0.050										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 35967 B4a**VALIDATION FINDINGS WORKSHEET**  
**Field Blanks**Page: 1 of 1  
Reviewer: MG  
2nd reviewer: an**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)☒ N N/A

Were field blanks identified in this SDG?

☒ N N/A

Were target analytes detected in the field blanks?

Sample: 15 Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units ( )
As	0.3 (ug/L)
Cr	0.20 ( )
Cu	0.360 ( )
Pb	0.7 ( )
Zn	0.87 ( )

Sample: 16 Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units (ug/L)
As	21.0
Co	0.3
Cr	25
Cu	53.2
Pb	23.3
Hg	0.1
Ag	0.200
Zn	91

LDC #:

## VALIDATION FINDINGS WORKSHEET

Page: 1 of 1

Reviewer: MG

2nd Reviewer: 

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

YN N/A

Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments:

LDC #: 35967 B4a

## VALIDATION FINDINGS WORKSHEET

### Duplicate Analysis

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: ca

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y)N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD)  $\leq 20\%$  for water samples and  $\leq 35\%$  for soil samples? If no, see qualifications below. A control limit of  $\pm R.L.$  ( $\pm 2X R.L.$  for soil) was used for sample values that were  $< 5X$  the R.L., including the case when only one of the duplicate sample values was  $< 5X R.L.$ . If field blanks were used for laboratory duplicates, note in the Overall Assessment.

**LEVEL IV ONLY:**

<u>Y</u>	<u>N</u>	<u>N/A</u>	Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.
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[illegible]

Comments:

LDC #: 35987

## EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 3.14.16Page: 1 of 12<sup>nd</sup> Reviewer: [Signature]The LDC job number listed above was entered by U.

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-	U	
Ia.	- All methods present?	✓	U	
Ib.	- All samples present/match report?	✓	U	
Ic.	- All reported analytes present?	✓	U	
Id.	-10% verification of EDD?	✓	U	
II.	EDD Preparation/Entry	-	U	
IIa.	- QC Level applied? (EPAS <del>stage</del> 2B or EPAS <del>stage</del> 4)	✓	U	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	NA	U	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	✓	U	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓	U	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓	U	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	✓	U	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	NA	U	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	U	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	NA	U	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	✓	U	

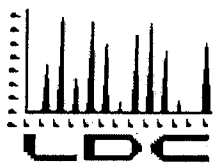
Notes: \*see readme

The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>
1) Readme_Jorgensen_031416.doc	MS Word 2003	A "Readme" file (this document).
2) LDC35967_AUR0,AUT8_VEDD_20160311.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AUR0 35967A AUT8 35967B

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 17, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fractions listed below. This SDG was received on March 7, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #35991:**

**SDG #**

**Fraction**

AVM8

Polychlorinated Biphenyls, Metals, Wet Chemistry

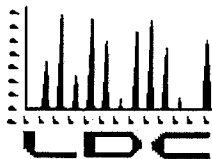
The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist



**LABORATORY DATA CONSULTANTS, INC.**

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 17, 2016

SUBJECT: Revised Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the revised validation report for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

**LDC Project #35991:**

**SDG #**

**Fraction**

AVM8

Wet Chemistry

- Added Moisture Content by ASTM D2216.

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist



L:\Anchor\Jorgensen\35991ST.wpd

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 11, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AVM8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-1-0-60cm-160201	AVM8A	Sediment	02/01/16
JF-LTR-5-0-34cm-160201	AVM8B	Sediment	02/01/16
JF-LTR-5-34-60cm-160201	AVM8C	Sediment	02/01/16
JF-LTR-19-0-60cm-160202	AVM8D	Sediment	02/02/16
JF-LTR-13-0-60cm-160202	AVM8E	Sediment	02/02/16
JF-LTR-2-0-60cm-160202	AVM8F	Sediment	02/02/16
JF-LTR-6-0-60cm-160202	AVM8G	Sediment	02/02/16
JF-LTR-5-0-18cm-160203	AVM8H	Sediment	02/03/16
JF-LTR-5-18-52cm-160203	AVM8I	Sediment	02/03/16
JF-LTR-5-18-52cm-160203MS	AVM8IMS	Sediment	02/03/16
JF-LTR-5-18-52cm-160203MSD	AVM8IMSD	Sediment	02/03/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UU (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Column	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
JF-LTR-5-18-52cm-160203	Not specified	Decachlorobiphenyl	169 (40-126)	All TCL compounds	J (all detects)	P

All internal standard areas and retention times were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Compound Quantitation**

Raw data were not reviewed for Stage 2B validation.

## **XI. Target Compound Identification**

Raw data were not reviewed for Stage 2B validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to surrogate %R, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Data Qualification Summary - SDG AVM8**

Sample	Compound	Flag	A or P	Reason
JF-LTR-5-18-52cm-160203	All TCL compounds	J (all detects)	P	Surrogate spikes (%R)

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG AVM8**

No Sample Data Qualified in this SDG

LDC #: 35991A3b

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AVM8

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/10/16

Page: 1 of 1

Reviewer: [Signature]

2nd Reviewer: [Signature]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, Δ	
II.	Initial calibration/ICV	A, Δ	% PSD / ICV ≤ 20
III.	Continuing calibration	Δ	CV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	N	
VI.	Surrogate spikes / IS	SW/Δ	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples / SRM	Δ / SW	ICV, SRM
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	Δ	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-1-0-60cm-160201 ✓	AVM8A	Sediment	02/01/16
2	JF-LTR-5-0-34cm-160201 ✓	AVM8B	Sediment	02/01/16
3	JF-LTR-5-34-60cm-160201 ✓	AVM8C	Sediment	02/01/16
4	JF-LTR-19-0-60cm-160202 ✓	AVM8D	Sediment	02/02/16
5	JF-LTR-13-0-60cm-160202 ✓	AVM8E	Sediment	02/02/16
6	JF-LTR-2-0-60cm-160202 ✓	AVM8F	Sediment	02/02/16
7	JF-LTR-6-0-60cm-160202 ✓	AVM8G	Sediment	02/02/16
8	JF-LTR-5-0-18cm-160203 ✓	AVM8H	Sediment	02/03/16
9	JF-LTR-5-18-52cm-160203 ✓	AVM8I	Sediment	02/03/16
10	JF-LTR-5-18-52cm-160203MS	AVM8IMS	Sediment	02/03/16
11	JF-LTR-5-18-52cm-160203MSD	AVM8IMSD	Sediment	02/03/16
12				
13				
14				

Notes:

MB - 020916					

LDC #: 35991A3b

## VALIDATION FINDINGS WORKSHEET

### Surrogate Recovery

Page: 1 of 1

Reviewer: FT

2nd Reviewer: 9

METHOD:   ✓   GC    HPLC

Are surrogates required by the method? Yes\_\_\_ or No\_\_\_.

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N/N/A Were surrogates spiked into all samples and blanks?

Y N N/A Did all surrogate recoveries (%R) meet the QC limits?

[illegible]

	Surrogate Compound		Surrogate Compound		Surrogate Compound		Surrogate Compound		
A	Chlorobenzene (CBZ)	G	Octacosane	M	Benzo(e)Pyrene	S	1-Chloro-3-Nitrobenzene	Y	Tetrachloro-m- xylene
B	4-Bromofluorobenzene (BFB)	H	Ortho-Terphenyl	N	Terphenyl-D14	T	3,4-Dinitrotoluene	Z	2-Bromonaphthalene
C	a,a,a-Trifluorotoluene	I	Fluorobenzene (FBZ)	O	Decachlorobiphenyl (DCB)	U	Triphenyltin	AA	Chloro-octadecane
D	Bromochlorobenene	J	n-Triacontane	P	1-methylnaphthalene	V	Tri-n-propyltin	BB	2,4-Dichlorophenylacetic acid
E	1,4-Dichlorobutane	K	Hexacosane	Q	Dichlorophenyl Acetic Acid (DCAA)	W	Tributyl Phosphate	CC	2,5-Dibromotoluene
F	1,4-Difluorobenzene (DFB)	L	Bromobenzene	R	4-Nitrophenol	X	Triphenyl Phosphate		



LDC #: 35991A 36

## VALIDATION FINDINGS WORKSHEET

**SRM**

Page: 1 of 1

Reviewer: FT

2nd Reviewer: 9

METHOD: ✓ GC \_\_\_ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Was SRM analyzed for each matrix in this SDG?

Y	N	N/A	Was the SRM recoveries within the limits?
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[illegible]

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 11, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AVM8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-1-0-60cm-160201	AVM8A	Sediment	02/01/16
JF-LTR-5-0-34cm-160201	AVM8B	Sediment	02/01/16
JF-LTR-5-34-60cm-160201	AVM8C	Sediment	02/01/16
JF-LTR-19-0-60cm-160202	AVM8D	Sediment	02/02/16
JF-LTR-13-0-60cm-160202	AVM8E	Sediment	02/02/16
JF-LTR-2-0-60cm-160202	AVM8F	Sediment	02/02/16
JF-LTR-6-0-60cm-160202	AVM8G	Sediment	02/02/16
JF-LTR-5-0-18cm-160203	AVM8H	Sediment	02/03/16
JF-LTR-5-18-52cm-160203	AVM8I	Sediment	02/03/16
JF-LTR-1-0-60cm-160201MS	AVM8AMS	Sediment	02/01/16
JF-LTR-1-0-60cm-160201DUP	AVM8ADUP	Sediment	02/01/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A

Mercury by EPA SW 846 Method 7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UU (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Cadmium Chromium Lead Mercury Zinc	0.0100 mg/Kg 0.04 mg/Kg 0.0050 mg/Kg 0.00083 mg/Kg 0.20 mg/Kg	All samples in SDG AVM8

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-LTR-1-0-60cm-160201	Cadmium Mercury	0.0462 mg/Kg 0.00163 mg/Kg	0.0462U mg/Kg 0.00163U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-LTR-5-0-34cm-160201	Cadmium	0.0358 mg/Kg	0.0358U mg/Kg
JF-LTR-19-0-60cm-160202	Cadmium Mercury	0.0350 mg/Kg 0.00247 mg/Kg	0.0350U mg/Kg 0.00247U mg/Kg
JF-LTR-2-0-60cm-160202	Cadmium	0.0370 mg/Kg	0.0370U mg/Kg

## VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JF-LTR-1-0-60cm-160201MS (All samples in SDG AVM8)	Chromium Copper	64.8 (75-125) 66.4 (75-125)	J (all detects) J (all detects)	A
JF-LTR-1-0-60cm-160201MS (All samples in SDG AVM8)	Zinc	129 (75-125)	J (all detects)	A

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## XI. Field Duplicates

No field duplicates were identified in this SDG.

## XII. Internal Standards (ICP-MS)

Internal standards data were not reviewed for Stage 2B validation.

### **XIII. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

### **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R, data were qualified as estimated in nine samples.

Due to laboratory blank contamination, data were qualified as not detected in four samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Metals - Data Qualification Summary - SDG AVM8**

Sample	Analyte	Flag	A or P	Reason
JF-LTR-1-0-60cm-160201 JF-LTR-5-0-34cm-160201 JF-LTR-5-34-60cm-160201 JF-LTR-19-0-60cm-160202 JF-LTR-13-0-60cm-160202 JF-LTR-2-0-60cm-160202 JF-LTR-6-0-60cm-160202 JF-LTR-5-0-18cm-160203 JF-LTR-5-18-52cm-160203	Chromium Copper Zinc	J (all detects) J (all detects) J (all detects)	A	Matrix spike (%R)

**Jorgensen Forge Early Action Area  
Metals - Laboratory Blank Data Qualification Summary - SDG AVM8**

Sample	Analyte	Modified Final Concentration	A or P
JF-LTR-1-0-60cm-160201	Cadmium Mercury	0.0462U mg/Kg 0.00163U mg/Kg	A
JF-LTR-5-0-34cm-160201	Cadmium	0.0358U mg/Kg	A
JF-LTR-19-0-60cm-160202	Cadmium Mercury	0.0350U mg/Kg 0.00247U mg/Kg	A
JF-LTR-2-0-60cm-160202	Cadmium	0.0370U mg/Kg	A

LDC #: 35991A4a

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-9-16

SDG #: AVM8

Stage 2B

Page: 1 of 1

Laboratory: Analytical Resources, Inc.

Reviewer: MG

2nd Reviewer: a

**METHOD:** Metals (EPA SW 846 Method 6020A/7471A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MS
VIII.	Duplicate sample analysis	A	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-1-0-60cm-160201	AVM8A	Sediment	02/01/16
2	JF-LTR-5-0-34cm-160201	AVM8B	Sediment	02/01/16
3	JF-LTR-5-34-60cm-160201	AVM8C	Sediment	02/01/16
4	JF-LTR-19-0-60cm-160202	AVM8D	Sediment	02/02/16
5	JF-LTR-13-0-60cm-160202	AVM8E	Sediment	02/02/16
6	JF-LTR-2-0-60cm-160202	AVM8F	Sediment	02/02/16
7	JF-LTR-6-0-60cm-160202	AVM8G	Sediment	02/02/16
8	JF-LTR-5-0-18cm-160203	AVM8H	Sediment	02/03/16
9	JF-LTR-5-18-52cm-160203	AVM8I	Sediment	02/03/16
10	JF-LTR-1-0-60cm-160201MS	AVM8AMS	Sediment	02/01/16
11	JF-LTR-1-0-60cm-160201DUP	AVM8ADUP	Sediment	02/01/16
12				
13				
14	PBS			

Notes:



LDC #: 35991A4a

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1

Reviewer: MG

2nd reviewer:                     

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed

LDC #: 35991A4a

SDG #: See Cover

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Sample Concentration units, unless otherwise noted: mg/kg

## VALIDATION FINDINGS WORKSHEET

## PB/ICB/CCB QUALIFIED SAMPLES

Soil preparation factor applied: 25x

Associated Samples: all

Page: 1 of 1

Reviewer: MG

2nd Reviewer: 7

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	1	2	4	6						
Cd	0.0100			0.0500	0.0462	0.0358	0.0350	0.0370						
Cr	0.04			0.20										
Pb	0.0050			0.0250										
Hg	0.00083			0.00415	0.00163		0.00247							
Zn	0.20			1.00										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 29, 2016

**Parameters:** Wet Chemistry

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc./  
Materials Testing & Consulting, Inc.

**Sample Delivery Group (SDG):** AVM8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-1-0-60cm-160201	AVM8A	Sediment	02/01/16
JF-LTR-5-0-34cm-160201	AVM8B	Sediment	02/01/16
JF-LTR-5-34-60cm-160201	AVM8C	Sediment	02/01/16
JF-LTR-19-0-60cm-160202	AVM8D	Sediment	02/02/16
JF-LTR-13-0-60cm-160202	AVM8E	Sediment	02/02/16
JF-LTR-2-0-60cm-160202	AVM8F	Sediment	02/02/16
JF-LTR-6-0-60cm-160202	AVM8G	Sediment	02/02/16
JF-LTR-5-0-18cm-160203	AVM8H	Sediment	02/03/16
JF-LTR-5-18-52cm-160203	AVM8I	Sediment	02/03/16
JF-LTR-1-0-60cm-160201	AVM8J	Sediment	02/01/16
JF-LTR-5-0-34cm-160201	AVM8K	Sediment	02/01/16
JF-LTR-5-34-60cm-160201	AVM8L	Sediment	02/01/16
JF-LTR-19-0-60cm-160202	AVM8M	Sediment	02/02/16
JF-LTR-13-0-60cm-160202	AVM8N	Sediment	02/02/16
JF-LTR-2-0-60cm-160202	AVM8O	Sediment	02/02/16
JF-LTR-6-0-60cm-160202	AVM8P	Sediment	02/02/16
JF-LTR-5-18-52cm-160203	AVM8Q	Sediment	02/03/16
JF-LTR-1-0-60cm-160201MS	AVM8AMS	Sediment	02/01/16
JF-LTR-1-0-60cm-160201DUP	AVM8ADUP	Sediment	02/01/16
JF-LTR-5-34-60cm-160201DUP	AVM8CDUP	Sediment	02/01/16
JF-LTR-5-34-60cm-160201TRP	AVM8CTRP	Sediment	02/01/16
JF-LTR-1-0-60cm-160201TRP	AVM8ATRP	Sediment	02/01/16
JF-LTR-5-34-60cm-160201DUP	AVM8LDUP	Sediment	02/01/16
JF-LTR-5-34-60cm-160201TRP	AVM8LTRP	Sediment	02/01/16

## **Introduction**

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method  
Specific Gravity by American Society for Testing and Materials (ASTM) D854  
Total Organic Carbon by Plumb Method  
Total Solids by Standard Method 2540G  
Moisture Content by ASTM D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

## **VII. Triplicates Sample Analysis**

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

TRP ID (Associated Samples)	Analyte	%RSD (Limits)	Flag	A or P
JF-LTR-1-0-60cm-160201TRP (JF-LTR-1-0-60cm-160201 JF-LTR-5-0-34cm-160201 JF-LTR-5-34-60cm-160201 JF-LTR-19-0-60cm-160202 JF-LTR-13-0-60cm-160202 JF-LTR-2-0-60cm-160202 JF-LTR-6-0-60cm-160202 JF-LTR-5-0-18cm-160203 JF-LTR-5-18-52cm-160203)	Total organic carbon	59.5 (≤30)	J (all detects)	A

### **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

### **IX. Field Duplicates**

No field duplicates were identified in this SDG.

### **X. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

### **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to triplicate %RSD, data were qualified as estimated in nine samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Wet Chemistry - Data Qualification Summary - SDG AVM8**

Sample	Analyte	Flag	A or P	Reason
JF-LTR-1-0-60cm-160201 JF-LTR-5-0-34cm-160201 JF-LTR-5-34-60cm-160201 JF-LTR-19-0-60cm-160202 JF-LTR-13-0-60cm-160202 JF-LTR-2-0-60cm-160202 JF-LTR-6-0-60cm-160202 JF-LTR-5-0-18cm-160203 JF-LTR-5-18-52cm-160203	Total organic carbon	J (all detects)	A	Triplicate sample analysis (%RSD)

**Jorgensen Forge Early Action Area  
Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AVM8**

No Sample Data Qualified in this SDG



LDC #: 35991A6

**VALIDATION COMPLETENESS WORKSHEET**

Date: 3-10-16

SDG #: AVM8

Level III

Page: 1 of 2

Laboratory: Analytical Resources, Inc./Materials Testing &amp; Consulting, Inc.

Reviewer: MG

2nd Reviewer: *av***METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS
VII.	Duplicate sample analysis	SW	TRIP
VIII.	Laboratory control samples	A	LCS / SRM
IX.	Field duplicates	N	
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-1-0-60cm-160201	AVM8A	Sediment	02/01/16
2	JF-LTR-5-0-34cm-160201	AVM8B	Sediment	02/01/16
3	JF-LTR-5-34-60cm-160201	AVM8C	Sediment	02/01/16
4	JF-LTR-19-0-60cm-160202	AVM8D	Sediment	02/02/16
5	JF-LTR-13-0-60cm-160202	AVM8E	Sediment	02/02/16
6	JF-LTR-2-0-60cm-160202	AVM8F	Sediment	02/02/16
7	JF-LTR-6-0-60cm-160202	AVM8G	Sediment	02/02/16
8	JF-LTR-5-0-18cm-160203	AVM8H	Sediment	02/03/16
9	JF-LTR-5-18-52cm-160203	AVM8I	Sediment	02/03/16
10	JF-LTR-1-0-60cm-160201	AVM8J	Sediment	02/01/16
11	JF-LTR-5-0-34cm-160201	AVM8K	Sediment	02/01/16
12	JF-LTR-5-34-60cm-160201	AVM8L	Sediment	02/01/16
13	JF-LTR-19-0-60cm-160202	AVM8M	Sediment	02/02/16
14	JF-LTR-13-0-60cm-160202	AVM8N	Sediment	02/02/16
15	JF-LTR-2-0-60cm-160202	AVM8O	Sediment	02/02/16
16	JF-LTR-6-0-60cm-160202	AVM8P	Sediment	02/02/16
17	JF-LTR-5-18-52cm-160203	AVM8Q	Sediment	02/03/16

LDC #: 35991A6

## VALIDATION COMPLETENESS WORKSHEET

Date: 3-10-16


SDG #: AVM8

Level III

Page: 2 of 2

Laboratory: Analytical Resources, Inc./Materials Testing &amp; Consulting, Inc.

Reviewer: MG

2nd Reviewer: **METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-1-0-60cm-160201MS	AVM8AMS	Sediment	02/01/16
19	JF-LTR-1-0-60cm-160201DUP	AVM8ADUP	Sediment	02/01/16
20	JF-LTR-5-34-60cm-160201DUP	AVM8CDUP	Sediment	02/01/16
21	JF-LTR-5-34-60cm-160201TRP	AVM8CTRP	Sediment	02/01/16
22	#1 TRP			
23	#12 DUP			
24	#12 TRP			
25	PBS 1			
26	PBS 2			

Notes:

LDC #: 35991A6

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Analysis Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: [Signature]

All circled methods are applicable to each sample.

[illegible]

Comments:

LDC #:

Triplicate Duplicate-Analysis

Page: 1 of 1

Reviewer: MG

2nd Reviewer:                     

**METHOD:** Inorganics, Method

5/16

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

YN N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y (N) N/A Were all duplicate sample relative percent differences (RPD)  $\leq 20\%$  for water and  $\leq 35\%$  for soil samples ( $\leq 10\%$  for Method 300.0)? If no, see qualification below. A control limit of  $\pm\text{CRDL}$  ( $\pm 2\text{X CRDL}$  for soil) was used for samples that were  $\leq 5\text{X}$  the CRDL, including when only one of the duplicate sample values were  $\leq 5\text{X}$  the CRDL. If field blanks were used for laboratory duplicates, see overall assessment.

**LEVEL IV ONLY:**

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \_\_\_\_\_

LDC #: 35991A4a

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike Analysis

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: G

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

YN N/A

Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments:

LDC #: 75991

## EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 3-14-16Page: 1 of 12<sup>nd</sup> Reviewer: \_\_\_\_\_The LDC job number listed above was entered by (4).

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓	(4)	
Ib.	- All samples present/match report?	✓	(4)	
Ic.	- All reported analytes present?	✓	(4)	
Id.	-10% verification of EDD?	✓	(4)	
II.	EDD Preparation/Entry	-		
IIa.	- QC Level applied? (EPAS <del>Stage</del> 2B or EPAS <del>Stage</del> 4)	✓	(4)	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	NA	(4)	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	NA	(4)	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓	(4)	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓	(4)	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	✓	(4)	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	NA	(4)	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	(4)	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	NA	(4)	
IIIf.	- Is the detect flag set to "N" for all "U" qualified blank results?	✓	(4)	

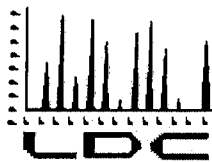
Notes: \*see readme

The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>
1) Readme_Jorgensen_031416.doc	MS Word 2003	A "Readme" file (this document).
2) LDC35991_AVM8_VEDD_20160311.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AVM8 35991A

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 17, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fractions listed below. This SDG was received on March 9, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### **LDC Project #36007:**

#### **SDG #**

#### **Fraction**

AUN8

Polychlorinated Biphenyls, Metals, Wet Chemistry

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

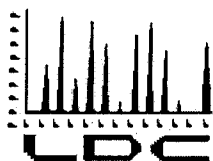
- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist





# LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 21, 2016

SUBJECT: Revised Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the revised validation report for the fraction listed below. Please replace the previously submitted report with the enclosed revised report.

**LDC Project #36007:**

**SDG #**

**Fraction**

AUN8

Polychlorinated Biphenyls, Metals, Wet Chemistry

- Added Moisture Content by ASTM D2216.

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist

[illegible]

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 11, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUN8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-5-0-2cm-160121	AUN8A	Sediment	01/21/16
JF-LTR-5-0-10cm-160121	AUN8B	Sediment	01/21/16
JF-LTR-22-0-2cm-160121	AUN8C	Sediment	01/21/16
JF-LTR-22-0-10cm-160121	AUN8D	Sediment	01/21/16
JF-LTR-11-0-2cm-160121	AUN8E	Sediment	01/21/16
JF-LTR-11-0-10cm-160121	AUN8F	Sediment	01/21/16
JF-LTR-14-0-2cm-160121	AUN8G	Sediment	01/21/16
JF-LTR-14-0-10cm-160121	AUN8H	Sediment	01/21/16
JF-LTR-17-0-2cm-160121	AUN8I	Sediment	01/21/16
JF-LTR-17-0-10cm-160121	AUN8J	Sediment	01/21/16
JF-LTR-16-0-2cm-160121	AUN8K	Sediment	01/21/16
JF-LTR-16-0-10cm-160121	AUN8L	Sediment	01/21/16
JF-LTR-116-0-10cm-160121	AUN8M	Sediment	01/21/16
JF-LTR-15-0-2cm-160121	AUN8N	Sediment	01/21/16
JF-LTR-15-0-10cm-160121	AUN8O	Sediment	01/21/16
JF-LTR-5-0-2cm-160121MS	AUN8AMS	Sediment	01/21/16
JF-LTR-5-0-2cm-160121DUP	AUN8ADUP	Sediment	01/21/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A  
Mercury by EPA SW 846 Method 7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. ICPMS Tune**

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## **III. Instrument Calibration**

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## **IV. ICP Interference Check Sample Analysis**

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## **V. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Lead	0.0050 mg/Kg	All samples in SDG AUN8

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks.

## **VI. Field Blanks**

No field blanks were identified in this SDG.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JF-LTR-5-0-2cm-160121MS (All samples in SDG AUN8)	Silver	22.0 (75-125)	J (all detects)	A

### VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

### IX. Serial Dilution

Serial dilution was not performed for this SDG.

### X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

### XI. Field Duplicates

Samples JF-LTR-16-0-10cm-160121 and JF-LTR-116-0-10cm-160121 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	JF-LTR-16-0-10cm-160121	JF-LTR-116-0-10cm-160121	
Arsenic	26.3	18.7	34
Cadmium	0.9	0.3	100
Chromium	27.1	23.1	16
Copper	37.2	34.3	8
Lead	45.8	15.6	98
Mercury	0.08	0.09	12
Silver	0.4	0.218	59
Zinc	99	87	13

## **XII. Internal Standards (ICP-MS)**

Internal standards data were not reviewed for Stage 2B validation.

## **XIII. Sample Result Verification**

Raw data were not reviewed for Stage 2B validation.

## **XIV. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R, data were qualified as estimated in fifteen samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Metals - Data Qualification Summary - SDG AUN8**

Sample	Analyte	Flag	A or P	Reason
JF-LTR-5-0-2cm-160121 JF-LTR-5-0-10cm-160121 JF-LTR-22-0-2cm-160121 JF-LTR-22-0-10cm-160121 JF-LTR-11-0-2cm-160121 JF-LTR-11-0-10cm-160121 JF-LTR-14-0-2cm-160121 JF-LTR-14-0-10cm-160121 JF-LTR-17-0-2cm-160121 JF-LTR-17-0-10cm-160121 JF-LTR-16-0-2cm-160121 JF-LTR-16-0-10cm-160121 JF-LTR-116-0-10cm-160121 JF-LTR-15-0-2cm-160121 JF-LTR-15-0-10cm-160121	Silver	J (all detects)	A	Matrix spike (%R)

**Jorgensen Forge Early Action Area  
Metals - Laboratory Blank Data Qualification Summary - SDG AUN8**

No Sample Data Qualified in this SDG



LDC #: 36007A4a

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AUN8


Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3-11-16

Page: 1 of 2

Reviewer: MG

2nd Reviewer: 

METHOD: Metals (EPA SW 846 Method 6020A/7471A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	MS
VIII.	Duplicate sample analysis	A	DUP
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	SW	D = 12+13
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB = Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-5-0-2cm-160121	AUN8A	Sediment	01/21/16
2	JF-LTR-5-0-10cm-160121	AUN8B	Sediment	01/21/16
3	JF-LTR-22-0-2cm-160121	AUN8C	Sediment	01/21/16
4	JF-LTR-22-0-10cm-160121	AUN8D	Sediment	01/21/16
5	JF-LTR-11-0-2cm-160121	AUN8E	Sediment	01/21/16
6	JF-LTR-11-0-10cm-160121	AUN8F	Sediment	01/21/16
7	JF-LTR-14-0-2cm-160121	AUN8G	Sediment	01/21/16
8	JF-LTR-14-0-10cm-160121	AUN8H	Sediment	01/21/16
9	JF-LTR-17-0-2cm-160121	AUN8I	Sediment	01/21/16
10	JF-LTR-17-0-10cm-160121	AUN8J	Sediment	01/21/16
11	JF-LTR-16-0-2cm-160121	AUN8K	Sediment	01/21/16
12	JF-LTR-16-0-10cm-160121	AUN8L	Sediment	01/21/16
13	JF-LTR-116-0-10cm-160121	AUN8M	Sediment	01/21/16
14	JF-LTR-15-0-2cm-160121	AUN8N	Sediment	01/21/16
15	JF-LTR-15-0-10cm-160121	AUN8O	Sediment	01/21/16

LDC #: 36007A4a

## VALIDATION COMPLETENESS WORKSHEET

Date: 3-11-16

SDG #: AUN8

Stage 2B

Page: 2 of 2

Laboratory: Analytical Resources, Inc.

Reviewer: MG

2nd Reviewer: 

METHOD: Metals (EPA SW 846 Method 6020A/7471A)

	Client ID	Lab ID	Matrix	Date
16	JF-LTR-5-0-2cm-160121MS	AUN8AMS	Sediment	01/21/16
17	JF-LTR-5-0-2cm-160121MSD DUP	AUN8AMS DUP	Sediment	01/21/16
18				
19				
20				
21	PBS			

Notes: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

LDC #: 5000

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1

Reviewer: MG

2nd reviewer: \_\_\_\_\_

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed

LDC #: 36007A4a

SDG #: See Cover

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Sample Concentration units, unless otherwise noted: mg/kg

## VALIDATION FINDINGS WORKSHEET

## PB/ICB/CCB QUALIFIED SAMPLES

Soil preparation factor applied: 25x

Associated Samples: all (&gt;5x)

Page: 1 of 1

Reviewer: MG

2nd Reviewer: ol

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	No Qual's.									
Pb	0.0050			0.0250										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36007A4a

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike Analysis

Page: 1 of 1

Reviewer: **MG**

2nd Reviewer: \_\_\_\_\_

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y(N) N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A

Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \* post digestion spike in limit for Ag (104.2%), so no "R" qual. for NDs

LDC#: 36007A4a**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 1  
Reviewer: MG  
2nd Reviewer:   **METHOD:** Metals (EPA Method 6020A/7471A)

Analyte	Concentration (mg/Kg)		RPD	
	12	13		
Arsenic	26.3	18.7	34	
Cadmium	0.9	0.3	100	
Chromium	27.1	23.1	16	
Copper	37.2	34.3	8	
Lead	45.8	15.6	98	
Mercury	0.08	0.09	12	
Silver	0.4	0.218	59	
Zinc	99	87	13	

V:\FIELD DUPLICATES\FD\_inorganic\36007A4a.WPD

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 11, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AUN8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-5-0-2cm-160121	AUN8A	Sediment	01/21/16
JF-LTR-5-0-10cm-160121	AUN8B	Sediment	01/21/16
JF-LTR-22-0-2cm-160121	AUN8C	Sediment	01/21/16
JF-LTR-22-0-10cm-160121	AUN8D	Sediment	01/21/16
JF-LTR-11-0-2cm-160121	AUN8E	Sediment	01/21/16
JF-LTR-11-0-10cm-160121	AUN8F	Sediment	01/21/16
JF-LTR-14-0-2cm-160121	AUN8G	Sediment	01/21/16
JF-LTR-14-0-10cm-160121	AUN8H	Sediment	01/21/16
JF-LTR-17-0-2cm-160121	AUN8I	Sediment	01/21/16
JF-LTR-17-0-10cm-160121	AUN8J	Sediment	01/21/16
JF-LTR-16-0-2cm-160121	AUN8K	Sediment	01/21/16
JF-LTR-16-0-10cm-160121	AUN8L	Sediment	01/21/16
JF-LTR-116-0-10cm-160121	AUN8M	Sediment	01/21/16
JF-LTR-116-0-10cm-160121DL	AUN8MDL	Sediment	01/21/16
JF-LTR-15-0-2cm-160121	AUN8N	Sediment	01/21/16
JF-LTR-15-0-10cm-160121	AUN8O	Sediment	01/21/16
JF-LTR-11-0-10cm-160121MS	AUN8FMS	Sediment	01/21/16
JF-LTR-11-0-10cm-160121MSD	AUN8FMSD	Sediment	01/21/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.



## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

All internal standard areas and retention times were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254 and Aroclor-1248.

## IX. Field Duplicates

Samples JF-LTR-16-0-10cm-160121 and JF-LTR-116-0-10cm-160121 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	JF-LTR-16-0-10cm-160121	JF-LTR-116-0-10cm-160121	
Aroclor-1248	31	59U	200

Compound	Concentration (ug/Kg)		RPD
	JF-LTR-16-0-10cm-160121	JF-LTR-116-0-10cm-160121DL	
Aroclor-1254	74	400	138
Aroclor-1260	73	270	115

## X. Compound Quantitation

All compound quantitations met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
JF-LTR-116-0-10cm-160121	Aroclor-1254 Aroclor-1260	Sample result exceeded calibration range.	Reported result should be within calibration range.	J (all detects) J (all detects)	A

Raw data were not reviewed for Stage 2B validation.

## XI. Target Compound Identification

Raw data were not reviewed for Stage 2B validation.

## XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
JF-LTR-116-0-10cm-160121	Aroclor-1254 Aroclor-1260	R R	A
JF-LTR-116-0-10cm-160121DL	All TCL compounds except Aroclor-1254 Aroclor-1260	R	A

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Data Qualification Summary - SDG AUN8**

Sample	Compound	Flag	A or P	Reason
JF-LTR-116-0-10cm-160121	Aroclor-1254 Aroclor-1260	R R	A	Overall assessment of data
JF-LTR-116-0-10cm-160121DL	All TCL compounds except Aroclor-1254 Aroclor-1260	R	A	Overall assessment of data

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG AUN8**

No Sample Data Qualified in this SDG

LDC #: 36007A3b

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUN8

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/11/16

Page: 1 of 2

Reviewer: [Signature]

2nd Reviewer: [Signature]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, Δ	
II.	Initial calibration/ICV	A, Δ	% PSD / ICV ≤ 20
III.	Continuing calibration	Δ	CCV ≤ 20
IV.	Laboratory Blanks	Δ	
V.	Field blanks	N	
VI.	Surrogate spikes / 15	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples / SRM	A / SW	ICV, SRM
IX.	Field duplicates	SW	D- 12, 13 12, 14
X.	Compound quantitation/RL/LOQ/LODs	SW	
XI.	Target compound identification	N	
XII.	Overall assessment of data	SW	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-5-0-2cm-160121	AUN8A	Sediment	01/21/16
2	JF-LTR-5-0-10cm-160121	AUN8B	Sediment	01/21/16
3	JF-LTR-22-0-2cm-160121	AUN8C	Sediment	01/21/16
4	JF-LTR-22-0-10cm-160121	AUN8D	Sediment	01/21/16
5	JF-LTR-11-0-2cm-160121	AUN8E	Sediment	01/21/16
6	JF-LTR-11-0-10cm-160121	AUN8F	Sediment	01/21/16
7	JF-LTR-14-0-2cm-160121	AUN8G	Sediment	01/21/16
8	JF-LTR-14-0-10cm-160121	AUN8H	Sediment	01/21/16
9	JF-LTR-17-0-2cm-160121	AUN8I	Sediment	01/21/16
10	JF-LTR-17-0-10cm-160121	AUN8J	Sediment	01/21/16
11	JF-LTR-16-0-2cm-160121	AUN8K	Sediment	01/21/16
12	JF-LTR-16-0-10cm-160121	AUN8L	Sediment	01/21/16
13	JF-LTR-116-0-10cm-160121	AUN8M	Sediment	01/21/16
14	JF-LTR-116-0-10cm-160121DL	AUN8MDL	Sediment	01/21/16
15	JF-LTR-15-0-2cm-160121	AUN8N	Sediment	01/21/16
16	JF-LTR-15-0-10cm-160121	AUN8O	Sediment	01/21/16
17	JF-LTR-11-0-10cm-160121MS	AUN8FMS	Sediment	01/21/16

LDC #: 36007A3b

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AUN8

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/11/16

Page: 2 of 2

Reviewer: ET

2nd Reviewer: [Signature]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-11-0-10cm-160121MSD	AUN8FMSD	Sediment	01/21/16
19				
20				
21				
22				

Notes:

	MB - 012516					

LDC #: 36007A3b

## VALIDATION FINDINGS WORKSHEET

### SRM

Page: 1 of 1Reviewer: FT

2nd Reviewer: az

METHOD: GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y	N	N/A	Was SRM analyzed for each matrix in this SDG?
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Y	N	N/A	Was the SRM recoveries within the limits?
---	---	-----	---

[illegible]

LDC#: 36007A3bVALIDATION FINDINGS WORKSHEET  
Field DuplicatesPage: 1 of 1  
Reviewer: [Signature]  
2nd Reviewer: [Signature]

METHOD: GC PCB (EPA SW 846 Method 8082A)

Compound	Concentration (ug/Kg)		RPD
	12	13	
Z	31	59U	200
<del>AA</del>	74	330	127 <u>g</u>
<del>AA BB</del>	73	240	107 <u>g</u>

F7

Compound	Concentration (ug/Kg)		RPD
	12	4	
<del>Z</del>	31	59U	200 <u>g</u>
AA	74	400	138
<del>AA B</del>	73	270	115

F7

V:\FIELD DUPLICATES\36007A3b.wpd



LDC #: 36007A3b

## VALIDATION FINDINGS WORKSHEET

### Compound Quantitation and Reported CRQLs

Page: 1 of 1  
Reviewer: FT  
2nd Reviewer: g

METHOD: ✓ GC    HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

**Level IV/D Only**

Y N N/A) Were CRQLs adjusted for sample dilutions, dry weight factors, etc.?

Y	N	N/A	Did the reported results for detected target compounds agree within 10.0% of the recalculated results?

[illegible]

Comments: See sample calculation verification worksheet for recalculations

LDC #: 36007A3b**VALIDATION FINDINGS WORKSHEET**  
**Overall Assessment of Data**Page: 1 of 1Reviewer: FT2nd Reviewer: 92METHOD: ☒ GC ☐ HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Associated samples	Compounds	Findings	Qualifications
	13	AA, BB	x'd cal Range	R/A
	14	all except AA, BB	diluted	R/A

Comments: \_\_\_\_\_

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 21, 2016

**Parameters:** Wet Chemistry

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc./  
Materials Testing & Consulting, Inc.

**Sample Delivery Group (SDG):** AUN8

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-5-0-2cm-160121	AUN8A	Sediment	01/21/16
JF-LTR-5-0-10cm-160121	AUN8B	Sediment	01/21/16
JF-LTR-22-0-2cm-160121	AUN8C	Sediment	01/21/16
JF-LTR-22-0-10cm-160121	AUN8D	Sediment	01/21/16
JF-LTR-11-0-2cm-160121	AUN8E	Sediment	01/21/16
JF-LTR-11-0-10cm-160121	AUN8F	Sediment	01/21/16
JF-LTR-14-0-2cm-160121	AUN8G	Sediment	01/21/16
JF-LTR-14-0-10cm-160121	AUN8H	Sediment	01/21/16
JF-LTR-17-0-2cm-160121	AUN8I	Sediment	01/21/16
JF-LTR-17-0-10cm-160121	AUN8J	Sediment	01/21/16
JF-LTR-16-0-2cm-160121	AUN8K	Sediment	01/21/16
JF-LTR-16-0-10cm-160121	AUN8L	Sediment	01/21/16
JF-LTR-116-0-10cm-160121	AUN8M	Sediment	01/21/16
JF-LTR-15-0-2cm-160121	AUN8N	Sediment	01/21/16
JF-LTR-15-0-10cm-160121	AUN8O	Sediment	01/21/16
JF-LTR-5-0-2cm-160121MS	AUN8AMS	Sediment	01/21/16
JF-LTR-5-0-2cm-160121DUP	AUN8ADUP	Sediment	01/21/16
JF-LTR-5-0-2cm-160121TRP	AUN8ATRP	Sediment	01/21/16

## **Introduction**

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method  
Specific Gravity by American Society for Testing and Materials (ASTM) D854  
Total Organic Carbon by Plumb Method  
Total Solids by Standard Method 2540G  
Moisture Content by ASTM D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

## **VII. Triplicate Sample Analysis**

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the method. The results were within QC limits.

## **IX. Field Duplicates**

Samples JF-LTR-16-0-10cm-160121 and JF-LTR-116-0-10cm-160121 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	JF-LTR-16-0-10cm-160121	JF-LTR-116-0-10cm-160121	
Specific gravity	2.65	2.64	0
Total organic carbon	3.40 %	2.44 %	33
Total solids	42.41 %	41.99 %	1

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD
	JF-LTR-16-0-10cm-160121	JF-LTR-116-0-10cm-160121	
#4 (4750)	99.7	99.7	0
#10 (2000)	97.4	97.0	0
#18 (1000)	94.5	94.0	1
#35 (500)	92.0	91.8	0
#60 (250)	88.6	88.6	0
#120 (125)	78.1	78.1	0
#230 (63)	55.5	54.3	2
(31.0)	42.3	42.3	0
(15.6)	27.0	28.7	6
(7.8)	16.4	17.6	7
(3.9)	9.9	11.1	11
(2.0)	6.8	7.8	14
(1.0)	5.2	5.6	7

## X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

## **XI. Overall Assessment of Data**

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.




**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Data Qualification Summary - SDG AUN8**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AUN8**

No Sample Data Qualified in this SDG

LDC #: 36007A6 **VALIDATION COMPLETENESS WORKSHEET**  
SDG #: AUN8 Level III  
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3-11-16  
Page: 1 of 2  
Reviewer: MG  
2nd Reviewer: 

**METHOD: (Analyte)** Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS
VII.	Duplicate sample analysis	A	TRIP
VIII.	Laboratory control samples	A	LCS / SQM
IX.	Field duplicates	SW	D=12+13
X.	Sample result verification	N	
XI	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-5-0-2cm-160121	AUN8A	Sediment	01/21/16
2	JF-LTR-5-0-10cm-160121	AUN8B	Sediment	01/21/16
3	JF-LTR-22-0-2cm-160121	AUN8C	Sediment	01/21/16
4	JF-LTR-22-0-10cm-160121	AUN8D	Sediment	01/21/16
5	JF-LTR-11-0-2cm-160121	AUN8E	Sediment	01/21/16
6	JF-LTR-11-0-10cm-160121	AUN8F	Sediment	01/21/16
7	JF-LTR-14-0-2cm-160121	AUN8G	Sediment	01/21/16
8	JF-LTR-14-0-10cm-160121	AUN8H	Sediment	01/21/16
9	JF-LTR-17-0-2cm-160121	AUN8I	Sediment	01/21/16
10	JF-LTR-17-0-10cm-160121	AUN8J	Sediment	01/21/16
11	JF-LTR-16-0-2cm-160121	AUN8K	Sediment	01/21/16
12	JF-LTR-16-0-10cm-160121	AUN8L	Sediment	01/21/16
13	JF-LTR-116-0-10cm-160121	AUN8M	Sediment	01/21/16
14	JF-LTR-15-0-2cm-160121	AUN8N	Sediment	01/21/16
15	JF-LTR-15-0-10cm-160121	AUN8O	Sediment	01/21/16
16	JF-LTR-5-0-2cm-160121MS	AUN8AMS	Sediment	01/21/16
17	JF-LTR-5-0-2cm-160121MSD	AUN8AMSD	Sediment	01/21/16

LDC #: 36007A6 **VALIDATION COMPLETENESS WORKSHEET**  
SDG #: AUN8 Level III  
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3-11-16  
Page: 2 of 2  
Reviewer: MG  
2nd Reviewer: OR

**METHOD:** (Analyte) Grain Size (PSEP Method), Specific Gravity (ASTM D854), TOC (Plumb), Total Solids (SM 2540G)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-5-0-2cm-160121DUP	AUN8ADUP	Sediment	01/21/16
19	JF-LTR-5-0-2cm-160121TRP	AUN8ATRP	Sediment	01/21/16
20				
21				
22				
23				
24				
25	PBS			

Notes:

LDC #: 36007A6

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Analysis Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: CA

All circled methods are applicable to each sample.

[illegible]

Comments:

LDC#: 36007A6**VALIDATION FINDINGS WORKSHEET****Field Duplicates**Page: 1 of 2Reviewer: MG2nd Reviewer: [Signature]Inorganics, Method See Cover

Analyte	Concentration (%)		RPD	
	12	13		
Specific Gravity (no units)	2.65	2.64	0	
Total Organic Carbon	3.40	2.44	33	
Total Solids	42.41	41.99	1	

V:\FIELD DUPLICATES\FD\_inorganic\36007A6a.WPD

LDC# 36007A6**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 2 of 2Reviewer: MG2nd Reviewer: anInorganics: Method See Cover

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD	
	12	13		
3/8"	100.0	100.0	0	a
#4 (4750)	99.7	99.7	0	
#10 (2000)	97.4	97.0	0	
#18 (1000)	94.5	94.0	1	
#35 (500)	92.0	91.8	0	
#60 (250)	88.6	88.6	0	
#120 (125)	78.1	78.1	0	
#230 (63)	55.5	54.3	2	
(31.0)	42.3	42.3	0	
(15.6)	27.0	28.7	6	
(7.8)	16.4	17.6	7	
(3.9)	9.9	11.1	11	
(2.0)	6.8	7.8	14	
(1.0)	5.2	5.6	7	

V:\FIELD DUPLICATES\FD\_inorganic\36007A6b.wpd

LDC #: 36007

## EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 3-17-16Page: 1 of 12<sup>nd</sup> Reviewer: [Signature]The LDC job number listed above was entered by [Signature].

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓	(JW)	
Ib.	- All samples present/match report?	✓	(JW)	
Ic.	- All reported analytes present?	✓	(JW)	
Id.	-10% verification of EDD?	✓	(JW)	
II.	EDD Preparation/Entry	-		
IIa.	- QC Level applied? (EPAS <del>Stage2</del> or EPAS <del>Stage4</del> )	✓	(JW)	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	N	(JW)	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	N	(JW)	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓	(JW)	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓	(JW)	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	N	(JW)	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	N	(JW)	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	(JW)	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	N	(JW)	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	N	(JW)	

Notes: \*see readme

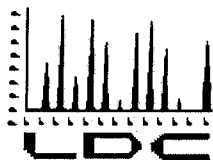
The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>
1) Readme_Jorgensen_031716.doc	MS Word 2003	A "Readme" file (this document).
2) LDC36007_AUN8_VEDD_20160316.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AUN8 36007A

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.





## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 17, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fraction listed below. This SDG was received on March 9, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #36008:**

**SDG #**

**Fraction**

AWE4

Polychlorinated Biphenyls

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist

L:\Anchor\Jorgensen\36008ST.wpd

**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 11, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AWE4

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
JF-Rinsate-V-160201	AWE4A	Water	02/01/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample JF-Rinsate-V-160201 was identified as a rinsate. No contaminants were found.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

All internal standard areas and retention times were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Compound Quantitation**

Raw data were not reviewed for Stage 2B validation.

## **XI. Target Compound Identification**

Raw data were not reviewed for Stage 2B validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Data Qualification Summary - SDG AWE4**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG  
AWE4**

No Sample Data Qualified in this SDG

LDC #: 36008A3b

**VALIDATION COMPLETENESS WORKSHEET**

SDG #: AWE4

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/11/16

Page: 1 of 1

Reviewer: *PT*2nd Reviewer: *CE***METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	Initial calibration/ICV	A / Δ	% RSD / 10% ≤ 20
III.	Continuing calibration	A	CV ≤ 20
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	R = 1
VI.	Surrogate spikes / 15	A	
VII.	Matrix spike/Matrix spike duplicates	N	QC sample
VIII.	Laboratory control samples	A	100
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-Rinsate-V-160201	AWE4A	Water	02/01/16
2				
3				
4				
5				
6				
7				
8				
9				
10				

Notes:

MB-021916					



LDC #: 36008

## EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 3.17.16Page: 1 of 12<sup>nd</sup> Reviewer: [Signature]The LDC job number listed above was entered by W.

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓	W	
Ib.	- All samples present/match report?	✓	W	
Ic.	- All reported analytes present?	✓	W	
Id.	-10% verification of EDD?	✓	W	
II.	EDD Preparation/Entry	-	W	
IIa.	- QC Level applied? (EPAS <del>Stage2</del> 3 or EPAS <del>Stage4</del> 4)	✓	W	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	N	W	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	N	W	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	N	W	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	N	W	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	N	W	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	N	W	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	W	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	N	W	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	N	W	

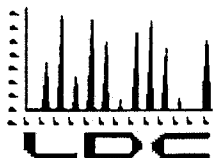
Notes: \*see readme

The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>
1) Readme_Jorgensen_031716.doc	MS Word 2003	A "Readme" file (this document).
2) LDC36008_AWE4_VEDD_20160316.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AWE4 36008A

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 24, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fractions listed below. This SDG was received on March 24, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

### **LDC Project #36090:**

#### **SDG #**

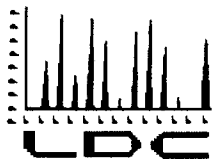
#### **Fraction**

AVM7

Polychlorinated Biphenyls, Metals, Wet Chemistry

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007



Please feel free to contact us if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'CRink', with a stylized, cursive script.

Christina Rink  
Project Manager/Chemist

[illegible]

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 24, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AVM7

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-15-0-60cm-160127	AVM7A	Sediment	01/27/16
JF-LTR-17-0-60cm-160127	AVM7B	Sediment	01/27/16
JF-LTR-22-0-60cm-160128	AVM7C	Sediment	01/28/16
JF-LTR-9-0-32cm-160128	AVM7D	Sediment	01/28/16
JF-LTR-9-32-60cm-160128	AVM7E	Sediment	01/28/16
JF-LTR-11-0-60cm-160129	AVM7F	Sediment	01/29/16
JF-LTR-111-0-60cm-160129	AVM7G	Sediment	01/29/16
JF-LTR-12-0-60cm-160129	AVM7H	Sediment	01/29/16
JF-LTR-3-0-60cm-160129	AVM7I	Sediment	01/29/16
JF-LTR-8-0-60cm-160129	AVM7J	Sediment	01/29/16
JF-LTR-14-0-60cm-160201	AVM7K	Sediment	02/01/16
JF-LTR-21-0-60cm-160201	AVM7L	Sediment	02/01/16
JF-LTR-4-0-50cm-160201	AVM7M	Sediment	02/01/16
JF-LTR-10-0-60cm-160128	AVM7AC	Sediment	01/28/16
JF-LTR-12-0-60cm-160129MS	AVM7HMS	Sediment	01/29/16
JF-LTR-12-0-60cm-160129MSD	AVM7HMSD	Sediment	01/29/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Surrogates**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.



Standard reference materials (SRM) were analyzed as required by the method. The Aroclor-1260 result in the SRM was within the QC limits, however, the laboratory also reported Aroclor-1254.

#### **IX. Field Duplicates**

Samples JF-LTR-11-0-60cm-160129 and JF-LTR-111-0-60cm-160129 were identified as field duplicates. No results were detected in any of the samples.

#### **X. Compound Quantitation**

Raw data were not reviewed for Stage 2B validation.

#### **XI. Target Compound Identification**

Raw data were not reviewed for Stage 2B validation.

#### **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Data Qualification Summary - SDG AVM7**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area  
Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG  
AVM7**

No Sample Data Qualified in this SDG

LDC #: 36090A3b

## VALIDATION COMPLETENESS WORKSHEET

SDG #: AVM7

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/24/16

Page: 1 of 1

Reviewer: F7

2nd Reviewer:         **METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	% PSD / ICV $\leq 20$
III.	Continuing calibration	$\Delta$	CCV $\leq 20$
IV.	Laboratory Blanks	A	
V.	Field blanks	N	
VI.	Surrogate spikes	A	
VII.	Matrix spike/Matrix spike duplicates	A	
VIII.	Laboratory control samples / SRM	A	LCS, SRM
IX.	Field duplicates	ND	D = 6, 7
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-15-0-60cm-160127	AVM7A	Sediment	01/27/16
2	JF-LTR-17-0-60cm-160127	AVM7B	Sediment	01/27/16
3	JF-LTR-22-0-60cm-160128	AVM7C	Sediment	01/28/16
4	JF-LTR-9-0-32cm-160128	AVM7D	Sediment	01/28/16
5	JF-LTR-9-32-60cm-160128	AVM7E	Sediment	01/28/16
6	JF-LTR-11-0-60cm-160129 D	AVM7F	Sediment	01/29/16
7	JF-LTR-111-0-60cm-160129 D	AVM7G	Sediment	01/29/16
8	JF-LTR-12-0-60cm-160129	AVM7H	Sediment	01/29/16
9	JF-LTR-3-0-60cm-160129	AVM7I	Sediment	01/29/16
10	JF-LTR-8-0-60cm-160129	AVM7J	Sediment	01/29/16
11	JF-LTR-14-0-60cm-160201	AVM7K	Sediment	02/01/16
12	JF-LTR-21-0-60cm-160201	AVM7L	Sediment	02/01/16
13	JF-LTR-4-0-50cm-160201	AVM7M	Sediment	02/01/16
14	JF-LTR-10-0-60cm-160128	AVM7AC	Sediment	01/28/16
15	JF-LTR-12-0-60cm-160129MS	AVM7HMS	Sediment	01/29/16
16	JF-LTR-12-0-60cm-160129MSD	AVM7HMSD	Sediment	01/29/16
17	MB-020816			

LDC #: 36090A3b

## VALIDATION FINDINGS WORKSHEET

### SRM

Page: 1 of 1

Reviewer: FT

2nd Reviewer: \_\_\_\_\_

METHOD: GC HPLC

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was SRM analyzed for each matrix in this SDG?

<u>Y/N</u>	<u>N/A</u>	Was the SRM recoveries within the limits?
------------	------------	---

[illegible]

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 24, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AVM7

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-15-0-60cm-160127	AVM7A	Sediment	01/27/16
JF-LTR-17-0-60cm-160127	AVM7B	Sediment	01/27/16
JF-LTR-22-0-60cm-160128	AVM7C	Sediment	01/28/16
JF-LTR-9-0-32cm-160128	AVM7D	Sediment	01/28/16
JF-LTR-9-32-60cm-160128	AVM7E	Sediment	01/28/16
JF-LTR-11-0-60cm-160129	AVM7F	Sediment	01/29/16
JF-LTR-111-0-60cm-160129	AVM7G	Sediment	01/29/16
JF-LTR-12-0-60cm-160129	AVM7H	Sediment	01/29/16
JF-LTR-3-0-60cm-160129	AVM7I	Sediment	01/29/16
JF-LTR-8-0-60cm-160129	AVM7J	Sediment	01/29/16
JF-LTR-14-0-60cm-160201	AVM7K	Sediment	02/01/16
JF-LTR-21-0-60cm-160201	AVM7L	Sediment	02/01/16
JF-LTR-4-0-50cm-160201	AVM7M	Sediment	02/01/16
JF-LTR-10-0-60cm-160128	AVM7AC	Sediment	01/28/16
JF-LTR-15-0-60cm-160127MS	AVM7AMS	Sediment	01/27/16
JF-LTR-15-0-60cm-160127DUP	AVM7ADUP	Sediment	01/27/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A  
Mercury by EPA SW 846 Method 7471A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Chromium Lead Mercury	0.06 mg/Kg 0.0050 mg/Kg 0.00167 mg/Kg	All samples in SDG AVM7

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-LTR-17-0-60cm-160127	Mercury	0.00156 mg/Kg	0.00156U mg/Kg
JF-LTR-22-0-60cm-160128	Mercury	0.00502 mg/Kg	0.00502U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-LTR-11-0-60cm-160129	Mercury	0.00160 mg/Kg	0.00160U mg/Kg
JF-LTR-111-0-60cm-160129	Mercury	0.00497 mg/Kg	0.00497U mg/Kg
JF-LTR-12-0-60cm-160129	Mercury	0.00333 mg/Kg	0.00333U mg/Kg
JF-LTR-14-0-60cm-160201	Mercury	0.00512 mg/Kg	0.00512U mg/Kg
JF-LTR-4-0-50cm-160201	Mercury	0.00421 mg/Kg	0.00421U mg/Kg

## VI. Field Blanks

No field blanks were identified in this SDG.

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	%R (Limits)	Flag	A or P
JF-LTR-15-0-60cm-160127MS (All samples in SDG AMV7)	Chromium	248 (75-125)	J (all detects)	A

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits with the following exceptions:

DUP ID (Associated Samples)	Analyte	RPD (Limits)	Flag	A or P
JF-LTR-15-0-60cm-160127DUP (All samples in SDG AMV7)	Chromium Zinc	87.0 (≤30) 32.0 (≤30)	J (all detects) J (all detects)	A

## IX. Serial Dilution

Serial dilution was not performed for this SDG.


## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.



## XI. Field Duplicates

Samples JF-LTR-11-0-60cm-160129 and JF-LTR-111-0-60cm-160129 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	JF-LTR-11-0-60cm-160129	JF-LTR-111-0-60cm-160129	
Arsenic	0.8	0.9	12
Cadmium	0.0248	0.0303	20
Chromium	22.6	13.5	50
Copper	34.0	21.5	45
Lead	1.13	0.96	16
Mercury	0.00160	0.00497	103 
Silver	0.025	0.020	22
Zinc	25	22	13

## XII. Internal Standards (ICP-MS)

Internal standards data were not reviewed for Stage 2B validation.

## XIII. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to MS %R and DUP RPD, data were qualified as estimated in fourteen samples.

Due to laboratory blank contamination, data were qualified as not detected in seven samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Metals - Data Qualification Summary - SDG AVM7**

Sample	Analyte	Flag	A or P	Reason
JF-LTR-15-0-60cm-160127 JF-LTR-17-0-60cm-160127 JF-LTR-22-0-60cm-160128 JF-LTR-9-0-32cm-160128 JF-LTR-9-32-60cm-160128 JF-LTR-11-0-60cm-160129 JF-LTR-111-0-60cm-160129 JF-LTR-12-0-60cm-160129 JF-LTR-3-0-60cm-160129 JF-LTR-8-0-60cm-160129 JF-LTR-14-0-60cm-160201 JF-LTR-21-0-60cm-160201 JF-LTR-4-0-50cm-160201 JF-LTR-10-0-60cm-160128	Chromium	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
JF-LTR-15-0-60cm-160127 JF-LTR-17-0-60cm-160127 JF-LTR-22-0-60cm-160128 JF-LTR-9-0-32cm-160128 JF-LTR-9-32-60cm-160128 JF-LTR-11-0-60cm-160129 JF-LTR-111-0-60cm-160129 JF-LTR-12-0-60cm-160129 JF-LTR-3-0-60cm-160129 JF-LTR-8-0-60cm-160129 JF-LTR-14-0-60cm-160201 JF-LTR-21-0-60cm-160201 JF-LTR-4-0-50cm-160201 JF-LTR-10-0-60cm-160128	Chromium Zinc	J (all detects) J (all detects)	A	Duplicate sample analysis (RPD)

**Jorgensen Forge Early Action Area  
Metals - Laboratory Blank Data Qualification Summary - SDG AVM7**

Sample	Analyte	Modified Final Concentration	A or P
JF-LTR-17-0-60cm-160127	Mercury	0.00156U mg/Kg	A
JF-LTR-22-0-60cm-160128	Mercury	0.00502U mg/Kg	A
JF-LTR-11-0-60cm-160129	Mercury	0.00160U mg/Kg	A
JF-LTR-111-0-60cm-160129	Mercury	0.00497U mg/Kg	A
JF-LTR-12-0-60cm-160129	Mercury	0.00333U mg/Kg	A
JF-LTR-14-0-60cm-160201	Mercury	0.00512U mg/Kg	A
JF-LTR-4-0-50cm-160201	Mercury	0.00421U mg/Kg	A

LDC #: 36090A4a  
SDG #: AVM7 AVM7  
Laboratory: Analytical Resources, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 3/24/16  
Page: 1 of 2  
Reviewer: *cr*  
2nd Reviewer: *sm*

**METHOD:** Metals (EPA SW 846 Method 6020A/7471A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	N	
VII.	Matrix Spike/Matrix Spike Duplicates	SW	
VIII.	Duplicate sample analysis	SW	
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LES
XI.	Field Duplicates	SW	(6,7)
XII.	Internal Standard (ICP-MS)	N	not reviewed
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-15-0-60cm-160127	AVM7A	Sediment	01/27/16
2	JF-LTR-17-0-60cm-160127	AVM7B	Sediment	01/27/16
3	JF-LTR-22-0-60cm-160128	AVM7C	Sediment	01/28/16
4	JF-LTR-9-0-32cm-160128	AVM7D	Sediment	01/28/16
5	JF-LTR-9-32-60cm-160128	AVM7E	Sediment	01/28/16
6	JF-LTR-11-0-60cm-160129	AVM7F	Sediment	01/29/16
7	JF-LTR-111-0-60cm-160129	AVM7G	Sediment	01/29/16
8	JF-LTR-12-0-60cm-160129	AVM7H	Sediment	01/29/16
9	JF-LTR-3-0-60cm-160129	AVM7I	Sediment	01/29/16
10	JF-LTR-8-0-60cm-160129	AVM7J	Sediment	01/29/16
11	JF-LTR-14-0-60cm-160201	AVM7K	Sediment	02/01/16
12	JF-LTR-21-0-60cm-160201	AVM7L	Sediment	02/01/16
13	JF-LTR-4-0-50cm-160201	AVM7M	Sediment	02/01/16
14	JF-LTR-10-0-60cm-160128	AVM7AC	Sediment	01/28/16
15	JF-LTR-15-0-60cm-160127MS	AVM7AMS	Sediment	01/27/16

LDC #: 36090A4a

# VALIDATION COMPLETENESS WORKSHEET

SDG #: ~~AVM7~~ AVM7

Stage 2B

Laboratory: Analytical Resources, Inc.

Date: 3/24/16

Page: 2 of 2

Reviewer: er

2nd Reviewer: sm

**METHOD:** Metals (EPA SW 846 Method 6020A/7471A)

	Client ID	Lab ID	Matrix	Date
16	JF-LTR-15-0-60cm-160127DUP	AVM7ADUP	Sediment	01/27/16
17				
18				
19				
20				

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



LDC #: 36090A4a

## VALIDATION FINDINGS WORKSHEET

## PB/ICB/CCB QUALIFIED SAMPLES

Page: 1 of 1

Reviewer: [Signature]

2nd Reviewer: [Signature]

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Soil preparation factor applied: \_\_\_\_\_

Sample Concentration units, unless otherwise noted: mg/Kg

Associated Samples: All

				Sample Identification									
Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum ICB/CCB <sup>a</sup> (ug/l)	Action Level	2	3	6	7	8	11	13			
Cr	0.06		0.3										
Pb	0.0050		0.025										
Hg	0.00167		0.0084	0.00156	0.00502	0.00160	0.00497	0.00333	0.00512	0.00421			

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36090AY

## VALIDATION FINDINGS WORKSHEET

### Matrix Spike Analysis

Page: \\_ of \\_

Reviewer: OR

2nd Reviewer:                     

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A

Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A

Were matrix spike percent recoveries (%R) within the control limits of 75-125? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A

Was a post digestion spike analyzed for ICP elements that did not meet the required criteria for matrix spike recovery?

**LEVEL IV ONLY:**

Y N N/A

Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]


Comments:

LDC #:

## VALIDATION FINDINGS WORKSHEET

Page:      of     

Reviewer: CA

2nd Reviewer: 

**METHOD:** Trace Metals (EPA SW 846 Method 6010/6020/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y/N/N/A Were all duplicate sample relative percent differences (RPD)  $\leq 20\%$  for water samples and  $\leq 35\%$  for soil samples? If no, see qualifications below. A control limit of +R.L. (+2X R.L. for soil) was used for sample values that were  $<5X$  the R.L., including the case when only one of the duplicate sample values was  $<5X$  R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

**LEVEL IV ONLY:**

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

[illegible]

Comments: \_\_\_\_\_



LDC#: 36090A4a

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 1  
Reviewer: am  
2nd Reviewer: sm**METHOD:** Metals (EPA Method 6010B/7000)

Analyte	Concentration (mg/Kg)		RPD
	6	7	
Arsenic	0.8	0.9	12
Cadmium	0.0248	0.0303	20
Chromium	22.6	13.5	50
Copper	34.0	21.5	45
Lead	1.13	0.96	16
Mercury	0.00160	0.00497	103
Silver	0.025	0.020	22
Zinc	25	22	13

\\LDCFILESERVER\validation\FIELD DUPLICATES\FD\_inorganic\36090A4a.wpd

## Laboratory Data Consultants, Inc. Data Validation Report

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 24, 2016

**Parameters:** Wet Chemistry

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc./  
Materials Testing & Consulting, Inc.

**Sample Delivery Group (SDG):** AVM7

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
JF-LTR-15-0-60cm-160127	AVM7A	Sediment	01/27/16
JF-LTR-17-0-60cm-160127	AVM7B	Sediment	01/27/16
JF-LTR-22-0-60cm-160128	AVM7C	Sediment	01/28/16
JF-LTR-9-0-32cm-160128	AVM7D	Sediment	01/28/16
JF-LTR-9-32-60cm-160128	AVM7E	Sediment	01/28/16
JF-LTR-11-0-60cm-160129	AVM7F	Sediment	01/29/16
JF-LTR-111-0-60cm-160129	AVM7G	Sediment	01/29/16
JF-LTR-12-0-60cm-160129	AVM7H	Sediment	01/29/16
JF-LTR-3-0-60cm-160129	AVM7I	Sediment	01/29/16
JF-LTR-8-0-60cm-160129	AVM7J	Sediment	01/29/16
JF-LTR-14-0-60cm-160201	AVM7K	Sediment	02/01/16
JF-LTR-21-0-60cm-160201	AVM7L	Sediment	02/01/16
JF-LTR-4-0-50cm-160201	AVM7M	Sediment	02/01/16
JF-LTR-10-0-60cm-160128	AVM7AC	Sediment	01/28/16
JF-LTR-15-0-60cm-160127MS	AVM7AMS	Sediment	01/27/16
JF-LTR-15-0-60cm-160127DUP	AVM7ADUP	Sediment	01/27/16
JF-LTR-9-32-60cm-160128DUP	AVM7EDUP	Sediment	01/28/16
JF-LTR-9-32-60cm-160128TRP	AVM7ETRP	Sediment	01/28/16
JF-LTR-15-0-60cm-160127TRP	AVM7ATRP	Sediment	01/27/16

## **Introduction**

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Grain Size by Puget Sound Estuary Protocols (PSEP) Method

Total Organic Carbon by Plumb Method

Total Solids by Standard Method 2540G

Specific Gravity by American Society for Testing and Materials (ASTM) D854

Moisture Content by ASTM D2216

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition.

All technical holding time requirements were met.

## **II. Initial Calibration**

All criteria for the initial calibration of each method were met.

## **III. Continuing Calibration**

Continuing calibration frequency and analysis criteria were met for each method when applicable.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

No field blanks were identified in this SDG.

## **VI. Matrix Spike/Matrix Spike Duplicates**

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

## **VII. Triplicates Sample Analysis**

Triplicate (TRP) sample analysis was performed on an associated project sample. Results were within QC limits.

## **VIII. Laboratory Control Samples/Standard Reference Materials**


Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

Standard reference materials (SRM) were analyzed as required by the methods. The results were within QC limits.

## **IX. Field Duplicates**

Samples JF-LTR-11-0-60cm-160129 and JF-LTR-111-0-60cm-160129 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration		RPD
	JF-LTR-11-0-60cm-160129	JF-LTR-111-0-60cm-160129	
Total organic carbon	0.026 %	0.022 %	17
Total solids	96.52 %	96.74 %	0
Specific gravity	2.83	2.83	0

Sieve Size (microns)	Percent Finer Than the Indicated Size (%) 		RPD
	JF-LTR-11-0-60cm-160129	JF-LTR-111-0-60cm-160129	
#4 (4750)	32.1	26.9	18
#10 (2000)	1.8	1.0	57
#18 (1000)	1.2	0.3	120
#35 (500)	1.1	0.2	138
#60 (250)	1.1	0.2	138
#120 (125)	1.1	0.2	138
#230 (63)	1.0	0.2	133

## X. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

## XI. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Data Qualification Summary - SDG AVM7**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area**  
**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG AVM7**

No Sample Data Qualified in this SDG

LDC #: 36090A6 **VALIDATION COMPLETENESS WORKSHEET**  
SDG #: AVM7/457004-120 Level III  
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3/24/16  
Page: 1 of 2  
Reviewer: cr  
2nd Reviewer: sm

**METHOD: (Analyte)** Grain Size (PSEP Method), TOC (Plumb), Total Solids (SM 2540G), Specific Gravity (ASTMD854)  
moisture content (ASTM D2216)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A A	
II.	Initial calibration	A	
III.	Calibration verification	A	
IV.	Laboratory Blanks	A	
V.	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates		
VII.	Duplicate sample analysis	A	TRP
VIII.	Laboratory control samples	A/A	LCS / SRM
IX.	Field duplicates	SW	(6,7)
X.	Sample result verification	N	
XI.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-LTR-15-0-60cm-160127	AVM7A	Sediment	01/27/16
2	JF-LTR-17-0-60cm-160127	AVM7B	Sediment	01/27/16
3	JF-LTR-22-0-60cm-160128	AVM7C	Sediment	01/28/16
4	JF-LTR-9-0-32cm-160128	AVM7D	Sediment	01/28/16
5	JF-LTR-9-32-60cm-160128	AVM7E	Sediment	01/28/16
6	JF-LTR-11-0-60cm-160129	AVM7F	Sediment	01/29/16
7	JF-LTR-111-0-60cm-160129	AVM7G	Sediment	01/29/16
8	JF-LTR-12-0-60cm-160129	AVM7H	Sediment	01/29/16
9	JF-LTR-3-0-60cm-160129	AVM7I	Sediment	01/29/16
10	JF-LTR-8-0-60cm-160129	AVM7J	Sediment	01/29/16
11	JF-LTR-14-0-60cm-160201	AVM7K	Sediment	02/01/16
12	JF-LTR-21-0-60cm-160201	AVM7L	Sediment	02/01/16
13	JF-LTR-4-0-50cm-160201	AVM7M	Sediment	02/01/16
14	JF-LTR-10-0-60cm-160128	AVM7AC	Sediment	01/28/16
15	JF-LTR-15-0-60cm-160127MS	AVM7AMS	Sediment	01/27/16
16	JF-LTR-15-0-60cm-160127MSD	AVM7AMSD	Sediment	01/27/16
17	JF-LTR-15-0-60cm-160127DUP	AVM7ADUP	Sediment	01/27/16



LDC #: 36090A6 **VALIDATION COMPLETENESS WORKSHEET**  
SDG #: AVM7/15T001-120 Level III  
Laboratory: Analytical Resources, Inc./Materials Testing & Consulting, Inc.

Date: 3/24/16  
Page: 2 of 2  
Reviewer: *ca*  
2nd Reviewer: *sm*

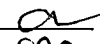
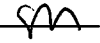
**METHOD:** (Analyte) Grain Size (PSEP Method), TOC (Plumb), Total Solids (SM 2540G), Specific Gravity (ASTMD854)

	Client ID	Lab ID	Matrix	Date
18	JF-LTR-9-32-60cm-160128DUP	AVM7EDUP	Sediment	01/28/16
19	JF-LTR-9-32-60cm-160128TRP	AVM7ETRP	Sediment	01/28/16
20	<i>MITRP</i>			
21				
22				
23				

Notes: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



LDC#: 36090A6

**VALIDATION FINDINGS WORKSHEET**  
**Field Duplicates**Page: 1 of 1  
Reviewer:   
2nd Reviewer: Inorganics, Method See Cover

Analyte	Concentration		RPD
	6	7	
Total organic carbon (%)	0.026	0.022	17
Total Solids (%)	96.52	96.74	0
Specific Gravity	2.83	2.83	0

Sieve Size (microns)	Percent Finer Than the Indicated Size (%)		RPD
	6	7	
#4 (4750)	32.1	26.9	18
#10 (2000)	1.8	1.0	57
#18 (1000)	1.2	0.3	120
#35 (500)	1.1	0.2	138
#60 (250)	1.1	0.2	138
#120 (125)	1.1	0.2	138
#230 (63)	1.0	0.2	133

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD\_inorganic\36090A6.wpd

LDC #: 36090

## EDD POPULATION COMPLETENESS WORKSHEET

Anchor

Date: 3.24.16Page: 1 of 12<sup>nd</sup> Reviewer: [Signature]The LDC job number listed above was entered by 4.

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓		
Ib.	- All samples present/match report?	✓		
Ic.	- All reported analytes present?	✓		
Id.	-10% verification of EDD?	✓		
II.	EDD Preparation/Entry	-		
IIa.	- QC Level applied? (EPAS <del>Stage</del> 2B or EPAS <del>Stage</del> 4)	✓		
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	NA		
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	NA		
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓		
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓		
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	✓		
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	NA		
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓		
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	NA		
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	✓		

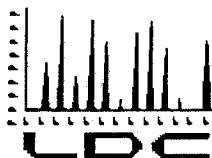
Notes: \*see readme

The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>
1) Readme_Jorgensen_032416.doc	MS Word 2003	A "Readme" file (this document).
2) LDC_AVM7_20160324.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AVM7 36090A

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.



## LABORATORY DATA CONSULTANTS, INC.

2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Anchor QEA, LLC  
720 Olive Way, Suite 900  
Seattle, WA 98101  
ATTN: Ms. Cindy Fields

March 30, 2016

SUBJECT: Jorgensen Forge EAA, Data Validation

Dear Ms. Fields,

Enclosed is the final validation report for the fractions listed below. This SDG was received on March 18, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #36118:**

**SDG #**

**Fraction**

AVS5

Polychlorinated Biphenyls, Metals

The data validation was performed under Stage 2B guidelines. The analyses were validated using the following documents, as applicable to each method:

- Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area, September 2015
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Method Data Review, October 1999
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, October 2004
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; Update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink  
Project Manager/Chemist

**EDD Stage 2B**

**LDC #36118 (Anchor Environmental-Seattle WA / Jorgensen Forge EAA)**

V:\LOGIN\Anchor\Jorgensen\36118ST.wpd

**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 29, 2016

**Parameters:** Polychlorinated Biphenyls

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AVS5

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
JF-Rinsate-V-160201	AVS5A	Water	02/01/16



## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and modified outlines of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (June 2008) and USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Superfund Organic Methods Data Review (October 1999). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Polychlorinated Biphenyls (PCBs) by Environmental Protection Agency (EPA) SW 846 Method 8082A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## **I. Sample Receipt and Technical Holding Times**

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

## **II. Initial Calibration and Initial Calibration Verification**

An initial calibration was performed as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds.

## **III. Continuing Calibration**

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds.

## **IV. Laboratory Blanks**

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

## **V. Field Blanks**

Sample JF-Rinsate-V-160201 was identified as a rinsate. No contaminants were found.

## **VI. Surrogates/Internal Standards**

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

All internal standard areas and retention times were within QC limits.

## **VII. Matrix Spike/Matrix Spike Duplicates**

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

## **VIII. Laboratory Control Samples**

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

## **IX. Field Duplicates**

No field duplicates were identified in this SDG.

## **X. Compound Quantitation**

Raw data were not reviewed for Stage 2B validation.

## **XI. Target Compound Identification**

Raw data were not reviewed for Stage 2B validation.

## **XII. Overall Assessment of Data**

The analysis was conducted within all specifications of the method.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed unusable as follows:

Sample	Compound	Flag	A or P
JF-Rinsate-V-160201	All TCL compounds	R	A

Due to a laboratory error, JF-Rinsate-V-160201 had a reporting limit of 0.10 ug/L. The laboratory re-extracted and analyzed JF-Rinsate-V-160201 in SDG AWE4 to achieve a reporting limit of 0.01 ug/L.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be rejected (R) are unusable for all purposes. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Data Qualification Summary - SDG AVS5**

Sample	Compound	Flag	A or P	Reason
JF-Rinsate-V-160201	All TCL compounds	R	A	Overall assessment of data

**Jorgensen Forge Early Action Area**  
**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG AVS5**

No Sample Data Qualified in this SDG

LDC #: 36048B3b

SDG #: AVS5

Laboratory: Analytical Resources, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 3/21/16

Page: 1 of 1

Reviewer: FZ

2nd Reviewer: [Signature]

**METHOD:** GC Polychlorinated Biphenyls (EPA SW846 Method 8082A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	% RSD / ICV $\leq 20$
III.	Continuing calibration	A	CD $\leq 20$
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	R = 1
VI.	Surrogate spikes /15	A	
VII.	Matrix spike/Matrix spike duplicates	N	QC sample
VIII.	Laboratory control samples	A	W
IX.	Field duplicates	N	
X.	Compound quantitation/RL/LOQ/LODs	N	
XI.	Target compound identification	N	
XII.	Overall assessment of data	A	

Note: A = Acceptable  
N = Not provided/applicable  
SW = See worksheet

ND = No compounds detected  
R = Rinsate  
FB = Field blank

D = Duplicate  
TB = Trip blank  
EB = Equipment blank

SB=Source blank  
OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-Rinsate-V-160201	AVS5A	Water	02/01/16
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Notes:

MB - 02/11/16					

per case narrative, RL on this report = 0.1 ug/L. Sample will be re-extracted & analyzed w/ the correct RL = 0.01 ug/L under a separate cover. → AW24

**Laboratory Data Consultants, Inc.**  
**Data Validation Report**

**Project/Site Name:** Jorgensen Forge Early Action Area

**LDC Report Date:** March 29, 2016

**Parameters:** Metals

**Validation Level:** Stage 2B

**Laboratory:** Analytical Resources, Inc.

**Sample Delivery Group (SDG):** AVS5

<b>Sample Identification</b>	<b>Laboratory Sample Identification</b>	<b>Matrix</b>	<b>Collection Date</b>
JF-Rinsate-V-160201	AVS5A	Water	02/01/16
JF-Rinsate-V-160201MS	AVS5AMS	Water	02/01/16
JF-Rinsate-V-160201DUP	AVS5ADUP	Water	02/01/16

## Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with Attachment 1 of the Quality Assurance Project Plan, Addendum No. 2 to the Operations, Monitoring, and Maintenance Plan for Jorgensen Forge Early Action Area (September 2015) and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines (CLPNFG) for Inorganic Superfund Data Review (October 2004). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following methods:

Arsenic, Cadmium, Chromium, Copper, Lead, Silver, and Zinc by Environmental Protection Agency (EPA) SW 846 Method 6020A  
Mercury by EPA SW 846 Method 7470A

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

## I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

## II. ICPMS Tune

The mass calibration was within 0.1 AMU and the percent relative standard deviation (%RSD) was less than or equal to 5%.

## III. Instrument Calibration

Initial and continuing calibrations were performed as required by the methods.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

## IV. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

## V. Laboratory Blanks

Laboratory blanks were analyzed as required by the methods. No contaminants were found in the laboratory blanks with the following exceptions:

Blank ID	Analyte	Maximum Concentration	Associated Samples
PB (prep blank)	Cadmium Chromium Copper Silver	0.010 ug/L 0.12 ug/L 0.040 ug/L 0.010 ug/L	All samples in SDG AVS5

Data qualification by the laboratory blanks was based on the maximum contaminant concentration in the laboratory blanks in the analysis of each analyte. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated laboratory blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
JF-Rinsate-V-160201	Cadmium Chromium	0.010 ug/L 0.6 ug/L	0.010U ug/L 0.6U ug/L



## VI. Field Blanks

Sample JF-Rinsate-V-160201 was identified as a rinsate. No contaminants were found with the following exceptions:

Blank ID	Analyte	Concentration (ug/L)
JF-Rinsate-V-160201	Arsenic	0.03
	Cadmium	0.010
	Chromium	0.6
	Copper	0.7
	Lead	0.050
	Zinc	0.83

## VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits.

## VIII. Duplicate Sample Analysis

Duplicate (DUP) sample analysis was performed on an associated project sample. Results were within QC limits.

## IX. Serial Dilution

Serial dilution was not performed for this SDG.

## X. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the methods. Percent recoveries (%R) were within QC limits.

## XI. Field Duplicates

No field duplicates were identified in this SDG.

## XII. Internal Standards (ICP-MS)

Internal standards data were not reviewed for Stage 2B validation.

## XIII. Sample Result Verification

Raw data were not reviewed for Stage 2B validation.

## XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the methods. No results were rejected in this SDG.

Due to laboratory blank contamination, data were qualified as not detected in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Based upon the data validation all other results are considered valid and usable for all purposes.

**Jorgensen Forge Early Action Area  
Metals - Data Qualification Summary - SDG AVS5**

No Sample Data Qualified in this SDG

**Jorgensen Forge Early Action Area  
Metals - Laboratory Blank Data Qualification Summary - SDG AVS5**

Sample	Analyte	Modified Final Concentration	A or P
JF-Rinsate-V-160201	Cadmium Chromium	0.010U ug/L 0.6U ug/L	A

LDC #: 36118A  
36048B4a

SDG #: AVS5

Laboratory: Analytical Resources, Inc.

# VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: 3-21-16

Page: 1 of 1

Reviewer: MG

2nd Reviewer: A

**METHOD:** Metals (EPA SW 846 Method 6020A/7470A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
II.	ICP/MS Tune	A	
III.	Instrument Calibration	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Laboratory Blanks	SW	
VI.	Field Blanks	SW	R = 1
VII.	Matrix Spike/Matrix Spike Duplicates	A	MS
VIII.	Duplicate sample analysis	A	DUP Cu OK by difference
IX.	Serial Dilution	N	not performed
X.	Laboratory control samples	A	LCS
XI.	Field Duplicates	N	
XII.	Internal Standard (ICP-MS)	N	not reviewed for Stage 2B
XIII.	Sample Result Verification	N	
XIV.	Overall Assessment of Data	A	

Note: A = Acceptable  
 N = Not provided/applicable  
 SW = See worksheet

ND = No compounds detected  
 R = Rinsate  
 FB = Field blank

D = Duplicate  
 TB = Trip blank  
 EB = Equipment blank

SB=Source blank  
 OTHER:

	Client ID	Lab ID	Matrix	Date
1	JF-Rinsate-V-160201	AVS5A	Water	02/01/16
2	JF-Rinsate-V-160201MS	AVS5AMS	Water	02/01/16
3	JF-Rinsate-V-160201DUP	AVS5ADUP	Water	02/01/16
4				
5				
6				
7				
8				
9				
10				
11				
12				
13	PBW			

Notes: \_\_\_\_\_

LDC #: ~~36048B4~~g

## VALIDATION FINDINGS WORKSHEET

### Sample Specific Element Reference

Page: 1 of 1  
Reviewer: MG  
2nd reviewer: a

All circled elements are applicable to each sample.

[illegible]

Comments: Mercury by CVAA if performed

36118A  
LDC #: ~~36048B4a~~  
SDG #: See Cover

METHOD: Trace metals (EPA SW 864 Method 6010B/6020/7000)

Sample Concentration units, unless otherwise noted: ug/L

VALIDATION FINDINGS WORKSHEET

PB/ICB/CCB QUALIFIED SAMPLES

Soil preparation factor applied: NA

Associated Samples: all

Page: 1 of 1  
Reviewer: MG  
2nd Reviewer: AL

Analyte	Maximum PB <sup>a</sup> (mg/Kg)	Maximum PB <sup>a</sup> (ug/L)	Maximum ICB/CCB <sup>a</sup> (ug/L)	Action Limit	1									
Cd		0.010		0.050	0.010									
Cr		0.12		0.60	0.6									
Cu		0.040		0.200										
Ag		0.010		0.050										

Samples with analyte concentrations within five times the associated ICB, CCB or PB concentration are listed above with the identifications from the Validation Completeness Worksheet. These sample results were qualified as not detected, "U".

Note : a - The listed analyte concentration is the highest ICB, CCB, or PB detected in the analysis of each element.

LDC #: 36116A  
36048B4aVALIDATION FINDINGS WORKSHEET  
Field BlanksPage: 1 of 1  
Reviewer: MG  
2nd reviewer: a

METHOD: Trace Metals (EPA SW 846 Method 6010/6020/7000)

Y N N/A  
Y N N/A

Were field blanks identified in this SDG?

Were target analytes detected in the field blanks?

Sample: 1 Field Blank / Trip Blank / Rinsate Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units ( )
As	0.03 (ug/L)
Cd	0.010 ( )
Cr	0.6 ( )
Cu	0.7 ( )
Pb	0.050 ( )
Zn	0.83 ( )

Sample: \_\_\_\_\_ Field Blank / Trip Blank / Rinsate / Other \_\_\_\_\_ (circle one)

Analyte	Concentration Units ( )

The LDC job number listed above was entered by W.

	EDD Process	Y/N	Init	Comments/Action
I.	EDD Completeness	-		
Ia.	- All methods present?	✓	W	
Ib.	- All samples present/match report?	✓	W	
Ic.	- All reported analytes present?	✓	W	
Id.	-10% verification of EDD?	✓	W	
II.	EDD Preparation/Entry	-		
IIa.	- QC Level applied? (EPAS <sub>Stage2B</sub> or EPAS <sub>Stage4</sub> )	✓	W	
IIb.	- Laboratory EMPC qualified results qualified (J with reason code 23)?	Na	W	
III.	Reasonableness Checks	-		
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	Na	W	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	✓	W	
IIIc.	- If reason codes used, do all qualified results have reason code field populated, and vice versa?	✓	W	
IIId.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	✓	W	
IIIe.	- Were any results reported above calibration range? If so, were results qualified appropriately?	Na	W	
IIIf.	- Are all results marked reportable "Yes" unless rejected for overall assessment in the data validation report?	✓	W	
IIIg.	-Are there any lab "R" qualified data? / Are the entry columns blank for these results?	✓, ✓	W	
IIIh.	- Is the detect flag set to "N" for all "U" qualified blank results?	✓	W	

Notes: \*see readme



The attached zipped file contains two files:

<u>File</u>	<u>Format</u>	<u>Description</u>
1) Readme_Jorgensen_032516.doc	MS Word 2003	A "Readme" file (this document).
2) LDC36048_AVR0_AVS5_VEDD_20160324.xlsx	MS Excel 2007	A spreadsheet for the following SDG(s): AVR0 36048A AVS5 36048B

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink at (760) 827-1100 if you have any questions regarding this electronic data submittal.